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THE  
CYCLOPÆDIA;  
OR,  
Universal Dictionary  
OF  
ARTS, SCIENCES, AND LITERATURE.

VOL. XXIV.

THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

THE  
CYCLOPÆDIA;

OR,

UNIVERSAL DICTIONARY

OF

Arts, Sciences, and Literature.

BY

ABRAHAM REES, D.D. F.R.S. F.L.S. *S. Amer. Soc.*

WITH THE ASSISTANCE OF

EMINENT PROFESSIONAL GENTLEMEN.



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VOL. XXIV.

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# CYCLOPÆDIA:

OR, A NEW

## UNIVERSAL DICTIONARY

OF

ARTS and SCIENCES.

### MONSTER.

**M**ONSTER, in *Anatomy* and *Physiology*, a creature in whom the body in general, or some large and conspicuous part of it, deviates remarkably from the accustomed formation. The union of the two eyes into one, with deficiency of the nose, the want of the brain, and of its membranous and bony coverings, the various more or less complete junctions of two bodies, &c. come under this description. A considerable deviation from the ordinary form or structure of a particular part or organ is often called a *monstrous* formation.

Considerable variation is observed in the form, size, and relative position of the nerves, vessels, muscles, bones, &c. All the smaller parts, particularly the blood-vessels, differ in almost every two bodies; so that it would be very difficult, if we descended into minutiae, to settle precisely what ought to be regarded as the most frequent, and therefore the *natural* structure. These aberrations from the accustomed type are generally called by anatomists *varieties*, and frequently *lusus naturæ*, as if they owed their origin to nature being in a sportive mood. No very accurate line can be drawn between them and monsters; nor can we assign any very rigorous meaning to the latter term, which is generally used in a loose and popular manner. "Monstri vox," says Haller, "ex ipsa linguæ natura videtur designare aberrationem animalis a consuetâ suæ speciei fabrica adeo evidentem, ut etiam ignarorum oculos feriat. Nobis vis vocis perinde videtur indicare fabricam, etiam grandium & conspicuarum partium, alienam a solita." De Monstris, lib. i. cap. 1.

In the present article we propose to consider the subject of unusual formations in a general view, without confining ourselves to those called monsters. When we speak of natural or unnatural formations, we only mean, by the former, the

VOL. XXIV.

organic arrangements, which are the most common; by the latter, the deviations from the standard.

In the following account of unusual formations of the body in general, or of its parts, we shall adopt the following divisions, without attempting to draw very accurately the line of distinction between varieties and monstrous formations, which differ rather in degree than in kind.

I. Varieties which are for the most part not incompatible with the right performance of the natural functions. 1. General observations. 2. Unusual formations of the skin; comprising, *a*, deviations from the natural colour; *b*, patches of hair; *c*, porcupine men; *d*, marks existing at birth; *e*, horns. 3. Varieties in the viscera; including, *a*, transpositions; *b*, varieties in the intestinal canal; *c*, in the kidneys and uterus; *d*, in the heart.

II. Monsters. 1. With unnatural formation of some parts: *a*, hare-lip; *b*, malformation of the urinary and generative organs; *c*, united eyes; *d*, spina bifida; *e*, imperforations; *f*, imperfect extremities; *g*, general malformation; *h*, resemblances of animals. 2. With unnatural position of parts. 3. With deficiency of parts: *a*, want of the brain and its coverings, and of the spinal marrow; *b*, of the heart; *c*, of various other parts. 4. With supernumerary parts; *a*, superfluous parts in bodies otherwise perfect, as fingers, limbs, heads, lower half of the body, and more or less complete body; *b*, united fœtuses; compound head; fœtuses double above and joined below; double below and joined above; two perfect bodies united; *c*, fœtuses included in the bodies of others.

III. Considerations on the production of these unusual formations.

I. *Varieties*.—1. *General Observations*.—Notwithstanding the general similarity of parts in the same species of animals, there

there is no reason why nature should not sometimes deviate from her ordinary plans. Accordingly, we find that there is much variety in animal structure, but this does not commonly affect the functions. Under this restriction, the variety is so great in the appearances of every part, that it is almost impossible to examine any two animals of the same species without remarking many differences. In the articular extremities of bones there is little variety; because a particular shape is best adapted to a particular kind of motion. In other parts, as the foramina, depressions, ridges, and sutures, there is great variety. Examples of this are seen in the ossa triquetra of the skull, which are sometimes absent, sometimes present, and in the latter case vary greatly in size and number; in the superciliary foramen of the frontal bone, which sometimes is deficient, its place being supplied by a notch; in the supra-scapular notch, which may be deep or shallow, or not exist at all; or there may be a complete foramen instead of it, &c. &c. There may be twenty-six ribs, or six lumbar vertebrae.

The same general rule will apply to the varieties of muscles. The principal object is a certain insertion near a joint, whereby the motion produced has a determined direction. These insertions, comparatively speaking, vary very little: but there is a great difference in the bodies and connections of the muscles, which have no share in the regulation of the motion. The biceps flexor cubiti has often an additional slip from the humerus; and the latissimus dorsi from the angle of the scapula. The palmaris longus and the plantaris are often entirely absent; but the other flexors of the wrist and extensors of the ankle supply their place. The same observation applies to the pyramidalis of the abdomen. The number of processes, to which the muscles of the spine are affixed, varies considerably.

In no part of the body are the arrangements less confined to a particular model than in the distribution of the blood-vessels. The object is, that blood should be conveyed to every part of the body, and brought back again to the heart: it is of no importance whether the fluid pass by one route or another. Thus, instead of three, we sometimes have two, and sometimes four, or even more numerous branches from the arch of the aorta: the artery of the upper extremity may divide into its radial and ulnar branches in the axilla, the arm or fore-arm: the order, in which the principal arteries come off from the subclavian and internal iliac trunks, is by no means constant, &c. There may be four, or only two valves instead of three, at the orifices of the great arteries. The great arterial trunks of the body and limbs, however, are not exposed to these varieties, because they generally occupy situations, in which they are most effectually protected from external injury. We have to remark, also, that the arteries of the upper are much more liable to varieties than those of the lower limbs. The latter are almost constant in their distribution, while those of the fore-arm and hand are hardly alike in any two subjects taken together. We do not see on what principle this difference can be accounted for.

We shall mention two other instances of varieties in the blood-vessels, which are sufficiently remarkable to deserve notice. There were no internal carotid arteries in the case of a nobleman lately examined by Mr. Wilson, lecturer on anatomy at Windmill-street; the vertebrals were unusually large, and the communicating branches of the posteriores cerebri of the basilar ran forwards to take the situation of the internal carotids. A woman had laboured under a difficulty of swallowing from her infancy, gradually increasing as she advanced in years, and relieved by regular bleedings, at monthly or shorter intervals; she became at

last so weak from her incapability of taking down sufficient nourishment, that she could not provide for her own maintenance, and was admitted into a parish work-house. For the last twenty years of her life she could scarcely muster up resolution to force down food enough to prevent her from starving. The obstruction seemed to be opposite to the first bone of the sternum: there was violent palpitation of the heart when she swallowed. Nothing was found after death to account for these circumstances, except a variety in the course of the right subclavian artery; which arose from the left side of the arch of the aorta, and then passed between the oesophagus and trachea. Memoirs of the London Medical Society, vol. ii. p. 275. We have several times seen this variety, but in instances where we know nothing of the previous history of the individual.

It cannot be at all important to the function of a viscus, whether it be in one mass or in separate portions: the structure being the same, the same actions will take place. Hence we often find the two kidneys united into one mass; and, not unfrequently, two or three small spleens besides the common one. Neither is it of consequence that a viscus should always be of the same shape, because its functions depend not on this circumstance, but on structure; accordingly we find much variety in this particular.

Many viscera are connected together in their functions, or by the medium of large blood-vessels, in such a way as to require a certain relative situation to each other: this also becomes necessary, in order to preserve the general shape of the animal. Accordingly we find, that when any important viscus is changed in its situation, it affects other viscera, requiring in them a similar change. In the instance of transposed viscera, which will be related afterwards, the change in the situation of the heart and liver was accompanied with a corresponding change in the stomach, spleen, pancreas, in short in all the viscera of the abdomen and thorax. So great a deviation as this changes almost the whole vital system, and happens very rarely. The functions cannot be affected, as they depend on structure and situation, both of which are preserved. Hence the individual alluded to arrived at the age of maturity, and might have continued to live to an extreme old age. The human machine might have been constructed in this way commonly; and under such circumstances, what is now called the natural situation of parts would have been as singular as the appearances which we shall mention.

There is less variety in the nervous system of animals of the same species, than in most parts of the body. Scarcely any differences are observed in the appearances of the brain, and much fewer in the distribution of the nerves than of the blood-vessels. Yet varieties have been seen even in the brain, of which a remarkable instance is recorded in the Transactions of a Society for promoting Medical and Surgical Knowledge, vol. i. p. 212. The falx cerebri was deficient, and, instead of the usual fissure dividing the two hemispheres, there was merely a depression for the superior longitudinal sinus. "No pia mater could be found in the situation of the natural cleft; a transverse section was made through the cerebrum, keeping above the level of the corpus callosum, but still no vestiges of membrane, or of cicatricious substance, or of previous inflammation and adhesion were to be found." There is also very little variety in the organs of sense: perhaps the mechanism in both these is nicer, so that a considerable deviation would interfere with their peculiar functions.

2. *Unusual Formations of the Skin*:—a. *Deviation of Colour*.—Deviations from the accustomed structure in this organ are more conspicuous in the coloured than in the white races



of mankind. One of the most striking is the entire absence of colouring matter, constituting the Albino, which was first noticed in the negro: this peculiar formation, however, occurs also in the white races, and in various genera both of mammalia and birds. The individuals are remarkable, not only for the whiteness of the skin, but also for that of the hair (feathers and fur in animals), and redness of the eyes. See INTEGUMENTS, ALBINO, and MAN.

Individuals of the black races are sometimes marked by spots of white, of various size and number, without any thing like disease of the skin. This circumstance occurs most frequently in negroes, and generally begins in early infancy; the individuals are called spotted or piebald negroes, in French, nègres-pies. Blumenbach has described a man of this kind, whom he saw in London; he was servant to the person who kept the animals at Exeter Change. He was a young man, perfectly black, excepting the umbilical and hypogastric regions of the abdomen, and the middle of the lower limbs, including the knees and neighbouring parts of the thighs and legs, which were of a clear and almost snowy whiteness, but spotted with black, like the skin of a panther. His hair was of two colours; on the middle of the front of the head, from the vertex to the forehead, where it ended in a sharp point, there was a white spot, with a yellowish tinge than those on the trunk and legs. The hair covering this was white, but resembled the rest in other respects. On comparing the picture of this man with three others (a boy and two girls), he observes, that the white spots occupied the abdomen and thigh, never appearing on the hands and feet, which parts with the groins are the first to turn black in the newly-born negroes; and that the arrangement of the white parts was symmetrical. Both the parents of this man, and of the others, of whom Blumenbach had collected accounts, were entirely black, so that Buffon's conjecture of this variety being produced by the cohabitation of a negro with an albino is groundless. Representations of spotted negroes may be seen in Blumenbach's *Abbildungen Naturhistorischer Gegenstände*, 3d part, and in Buffon, Supplement, t. iv. p. 565. tab. 2. See also Byrd in Phil. Transf. vol. xix. p. 781, for an instance, in which the spots began in the fourth year, and increased in size; and Morgan, in Transactions of the Philosophical Society at Philadelphia, t. ii. p. 392.

These spots, in which the epidermis is perfectly healthy, and which are distinguishable from the rest of the skin, only by their whiteness, are not to be confounded with diseases of the organ, where the cuticle becomes scaly or branny, which are frequent in some of the black races. Nor are they peculiar to the dark-coloured races. Blumenbach has seen two instances in Germans, one of a youth, and the other of a man 60 years old. They both had a rather tawny skin, marked here and there with various sized spots of the clearest white. They appeared first in the former in infancy, and in the latter at the age of manhood.

b. *Hairy Coverings*.—Patches of the skin are sometimes thickly covered with hair, like that on the head. Such occurrences have given occasion to reports of persons having hides like animals. Buffon (Supplement, v. iv. p. 571.) Wunshi (Kosmologische unterhaltungen, pt. 3.), and Lavater (Phylognom. fragments, pt. 4. p. 68.) have given figures and descriptions of A. M. Herrig, a woman of Triers, said to have the skin of a deer, and shewn in many parts of Europe. Soemmering saw this person, and found the peculiarity to consist of numerous and large elevations of the skin, covered by thick and strong hairs. They were of the nature of the moles, often seen on the face of very fair persons, and generally giving origin to hair; he

could not discover a single hair resembling that of a deer. Beschreibung einiger Missgeburten, &c. p. 32.

c. *The Porcupine Men*.—In the English family of the porcupine men, a very singular structure of the skin is observed. At nine weeks after birth, this remarkable peculiarity first began to shew itself. The skin of the whole body, except the head and face, the palms and soles, is covered by hard wartlike prominences. "It was not easy to think of any sort of skin or natural integument, that exactly resembled it; some compared it to the bark of a tree; others thought it looked like seal-skin, others like the hide of the elephant, or the skin about the legs of the rhinoceros; and some took it to be like a large wart, or a number of warts uniting and overspreading the whole body. The bristly parts, which were chiefly about the belly and flanks, looked and rustled like the bristles or quills of a hedge-hog, shorn off within an inch of the skin." The person enjoyed good health; every thing connected with his excretions was natural; he derived no inconvenience from the state of his skin, except that it would crack and bleed after very hard work. (Philos. Transf. N<sup>o</sup> 424, with views of the skin.) In a subsequent account, after an interval of 24 years, the man is said to continue the same. "The covering seemed most nearly to resemble an innumerable company of warts, of a dark brown colour, and a cylindrical figure, rising to a like height (an inch at their full size), and growing as close as possible to one another, but so stiff and elastic, that when the hand is drawn over them, they make a rattling noise." They are shed annually in the autumn or winter months, and succeeded by young ones of a paler brown. The person had the small-pox, and had been salivated twice; the tubercles disappeared on these occasions, but were reproduced. The health continued good. He had six children with the same peculiarity, beginning, as in himself, about nine weeks after birth. One only of these survived, and was eight years old, when the account was written. Phil. Transf. v. xlix. p. 21, with a figure of the hand. Edwards's Gleanings of Natural History, v. i. pl. 212. A description of them at a later period has also been given by Blumenbach, in Voigt's Neue Magazin, v. iii. pt. 4, which we have not seen.

There is an instance somewhat analogous recorded, of a man whose skin was covered in various places with warts of different size and form. See Historia Pathologica singularis Cutis turpitudinis, J. G. Rheinhardi viri 50 annorum. Lpf. 1793, fol.

d. *Marks existing at Birth*.—The various appearances of the skin, comprehended under the name of *nævi materni*, and commonly supposed to be produced by the influence of the mother's imagination, are natural varieties in the structure of this organ. The colour of these is generally red, livid, or brownish; they sometimes consist of considerable masses of substance, or may be quite superficial; they are smooth or irregular on the surface. Numerous ramifications of blood-vessels are generally visible in them. We have seen one occupying nearly the whole fore-arm; but often they are not larger than a sixpence. They are frequent about the face. They appear to consist of a congeries of vessels forming almost innumerable communications, and correspond nearly to what Mr. J. Bell has described by the name of "aneurism from anastomosis." See NÆVI and ANEURISM.

e. *Horns*.—The formation of hard substances, described under the name of *horns*, on the human head, is not a very uncommon occurrence. These certainly cannot be regarded in the same point of view with the varieties in formation of different parts, as they are not originally formed; and they may be classed rather with the productions of disease, although they



they are free from pain, and attended with no inconvenience when undisturbed. The term *horn* is applied to them from their hardness and colour; for they bear no resemblance in their development and growth to the parts of animals called horns. (See *HORN*, in *Comparative Anatomy*.) Yet productions from the skin, resembling true horns, have been seen in animals. A sheep, about four years old, had a large horn, three feet long, growing on its flank. It had no connection with bone, and appeared to be only attached to the external skin. It dropped off in consequence of its weight having produced ulceration in the soft parts to which it adhered. On examining it, there was a fleshy substance, seven inches long, of a fibrous texture, filling up the cavity on which the horn had been formed. (Home on horny excrescences; Phil. Transf. vol. lxxxi.) In the same work, vol. xlix. p. 183, is another example of a very regularly shaped horn of 26lbs. in weight, growing from the neck of a sheep.

The growths, which have been called horns, in the human subject, have taken place from encysted tumours, which have burst, and discharged a thick gritty fluid; the cysts have then collapsed, and the new substance has gradually grown from the bottom. It is at first pliable, and afterwards assumes nearly the colour and hardness of horn. The lining of these cysts approaches to the nature of cuticle, and hair has sometimes been found among their contents. The horn then is simply a secretion of cuticular substance from the surface of the cyst, becoming dry and hard in consequence of its exposure. Such horns may be produced in any situation of the body.

In the case of a middle aged woman related by Mr. Home, a moveable tumour grew on the side of the head, in the course of four or five years, to the size of a pullet's egg, when it burst, and discharged a thick gritty fluid. A small soft substance of a reddish colour was produced from the centre of the tumour; it increased in length and thickness, and continued pliable for about three months, when it first began to put on a horny appearance. It attained the length of five inches, being about one inch in circumference at the ends, and rather less in the middle. It was curled, like a ram's horn, and resembled isinglass in colour. Three others formed successively in this individual.

Bartholin, in his epistles, mentions a woman who had a tumour under the scalp, covering the temporal muscle. This gradually enlarged, and a horn grew from it, which had become 12 inches long in the year 1646, when he first saw it. There is a horny excrescence in the British Museum, 11 inches long, and  $2\frac{1}{2}$  in circumference at the base, or thickest part, produced from a wen on the head; it began in the 48th year of the woman's age, and was four years in reaching the above-mentioned size. See Mr. Home's paper in the Phil. Transf. quoted above.

### 3. *Varieties in the Viscera.*—a. *Transposition of the Viscera.*

—A very complete account of such an arrangement has been given by Dr. Baillie, in the seventy-eighth volume of the Philosophical Transactions: the particulars ascertained by his dissection are there very minutely detailed. The anterior mediastinum inclined obliquely to the right; the left lung was divided into three, and the right into two lobes. The apex of the heart pointed to the right side, nearly opposite to the sixth rib, and its cavities, as well as the large vessels, were completely transposed. The right auricle and ventricle were situated on the left, and the left cavities on the right side. The pulmonary artery ascended towards the right side, and the arch of the aorta also passed to the right, while the superior and inferior cavae opened into their auricle on the left side of the spine. The right subclavian vein crossed the chest in front of the arteries that arise from the arch of the

aorta; the arteria innominata produced the left carotid and subclavian, while the right arteries came off separately. The descending aorta was on the right, and the vena azygos on the left side of the spine; the thoracic duct opened into the right subclavian vein.

The ordinary course of the right and left recurrent nerves was interchanged. The liver was placed on the left side of the epigastric region; its ligaments and blood-vessels, the gall-bladder, and the biliary ducts bearing the same relations to it in this new situation as they do in the ordinary one. The ductus communis choledochus terminated on the fore part of the duodenum. The spleen was placed in the right hypochondrium, and the pancreas corresponded to the altered course and situation of the duodenum. The great end of the stomach was situated on the right side of the abdomen, and the pylorus a little on the left of the spine. The duodenum first passed to the right side, behind the small end of the stomach, then turned on itself towards the left side; it afterwards took the proper sweep to the right side, passing behind the superior mesenteric artery and vein. The mesentery was inclined obliquely from right to left. The ilium terminated in the great intestine on the left side, and the cæcum was placed on the left psoas magnus and iliacus internus muscles. The arch of the colon passed from the left to the right side of the body, and the sigmoid flexure crossed over the right psoas, to get into the cavity of the pelvis. The renal vessels were transposed.

The aorta in the abdomen continued on the right side of the spine, and its branches were altered from their natural course in accommodation to the peculiar situation of the viscera. The inferior vena cava was placed on the left of the vertebral column, and perforated the left side of the tendinous centre of the diaphragm.

Dr. Baillie adds, that "the person seemed to have used his right hand in preference to his left, as is usually the case, as was readily discovered by the greater bulk and hardness of that hand, as well as the greater fleshyness of the arm. It was not indeed to be expected that he should be left-handed. The person, while alive, was not conscious of any unusual situation of his heart; and his brother has his heart pointing to the left side, as in ordinary cases. Indeed there was little reason to expect that we should meet with any thing particular in the account of his life. His health could not be affected by such a change of situation in his viscera; nor could there arise from it any peculiar symptoms of disease. Still less could there be any connection between such a change and his dispositions or external actions."

In the body of a child ten months old Mr. Abernethy found the heart pointing to the right side of the chest, and the liver in the middle of the epigastric region, extending equally into each hypochondrium. The great blood-vessels of the chest, and the other abdominal organs, were not transposed in this case. Phil. Transf. vol. lxxxiii.

There are several other minute and well authenticated accounts of similar transpositions. Mery found all the parts of the abdomen and chest in this inverted state in a soldier who died at the age of 72; and has left a very exact narrative of the dissection. See the *Récueil des Anciens Mémoires de l'Acad. t. x. also Mém. de l'Acad. an. 1733, p. 374*. Another instance is recorded by Riolan, in his *Disquisitio de transpositione partium naturalium et vitalium in corpore humano*; see his *Opuscula anatomica*, 1652; and another by F. Hoffman, in his *Cardianastrophe, seu cordis inversio memorabilis, observata a collegio medico civitatis Hallensis, in anatomia cadaveris feminei*; Leipzig, 1671. Numerous references to other instances may be seen in Haller's *Opera minora*, tom. iii. p. 16.



b. *Varieties in the Intestinal Canal.*—Short processes, terminating in blind extremities, and called diverticula, are sometimes found in the small intestine. (See *INTESTINE*.) A more remarkable deviation from the ordinary structure of these parts was met with by Mr. Abernethy. In the well-formed body of a boy, four feet three inches in length, he found a small intestine only two feet long, with a large one of four feet. Phil. Transf. vol. lxxxiii.

To the unusual formation of the intestines belongs also the want of the opening at the anus; the rectum ends in a cul-de-sac. Sometimes all the external openings are deficient; those of the urethra and vagina as well as of the large intestine. The mouth or nose may also be closed.

c. *In the Kidnies and Uterus.*—Among the abdominal viscera, the kidneys are frequently subject to varieties in number and arrangement. There may be only the right or left; or the two may be joined together, so as to represent a crescent; or they may be united into one large rounded mass. (Haller, Op. Minor. t. iii. p. 34. p. 40. et seq.) In these cases there are considerable deviations from the ordinary number and arrangements of the renal vessels.

Instances are not very uncommon of two uteri; see the article *GENERATION*, in the description of the uterus, and Haller de Monstris, lib. i. cap. 9.

d. *In the Heart.*—In many of the cases which we have just been considering, the functions are still perfectly executed; the change of position in the transposed viscera, or of size and figure in the united kidneys, leaves these organs just as capable of answering their usual purposes as when the ordinary arrangement is observed. But the heart is often the seat of deviations from the accustomed structure, which essentially affect its functions, and thereby exert such an influence on circulation and respiration, as to give a very peculiar character to the whole state of the individual, and generally to shorten very considerably the term of existence. In animals which breathe, the passage of the blood through the lungs produces a remarkable change in its properties and appearances; the right performance of the various vital processes requires that the organs of the body should be supplied with blood that has undergone this change; and this object cannot be accomplished unless the cavities of the heart holding the two kinds of blood, are kept perfectly free from all communication with each other. In many instances the heart is so formed that the two sides constantly communicate; this is of no consequence so long as fetal existence continues, in which the blood is all of one kind; but afterwards it produces a mixture of the arterial and venous bloods, and the greatest disturbance of respiration and circulation. The body, particularly its extremities, is cold and livid; the slightest exercise produces anxiety, and often a suffocating sensation, accompanied with fits of insensibility; the growth is impeded, and the whole being so altered, that the individual is unfit for any active employment, and has a truly miserable appearance. Sometimes the two ventricles form but one cavity; or there may be a larger or smaller opening in the partition between them, with the aorta rising over it, and the pulmonary artery having a very small communication with its ventricle, &c. (See *HEART*.) The black and red bloods will be more or less completely mixed in these cases, according to the degree of malformation, and the individual will either die very soon after birth, or exist in a state of languor, suffering, and constant prospect of death, for a few weeks, months, or even years.

II. *Monsters.*—We proceed to consider those imperfect organizations which are commonly called monsters, and shall describe them under the four divisions generally adopted; viz. 1. Unnatural formation. 2. Unusual position of cer-

tain organs. 3. Deficiency. 4. Redundance of certain parts. Some of the examples may not, perhaps, be deemed sufficiently striking deviations from the accustomed form to deserve the name of monsters; but we take up the term in its most extensive meaning. Neither are the kinds of monstrosity kept distinct in each case; they may all be united in one specimen, and the want of one part is often attended with an unnatural position of another, &c.

1. *Monsters with unnatural Formation of certain Parts.*—The hare-lip is one of the most striking examples of vicious formation of parts; this may either be a simple fissure in the lip, or it may be complicated with more or less extensive division and deficiency of the bony and soft palates, so that often the nose and mouth form but one cavity. (See *HARE-LIP*.) When this mal-formation exists in a very considerable degree it renders sucking impracticable.

b. The urinary and generative organs in both sexes are frequently the seat of unnatural arrangements. The anterior part of the urinary bladder and the integuments covering it may be wanting; the posterior portion being protruded between the recti abdominis muscles, and forming by its mucous lining a soft, red, sensible protuberance on the surface of the lower part of the abdomen, contiguous at its circumference with the common skin, with the ureters opening on it, and constantly allowing the passage of the urine. The ossa pubis do not come together in these cases, but are separated by an interval of an inch or two: hence the recti muscles are unusually separated, and allow the projection of the back of the bladder. So extensive a mal-formation could not exist in this part of the body without disturbing the arrangement of the generative organs, particularly in the male. The wide separation of the ossa innominata occasions an unusually long portion of the penis to be concealed under the integuments; hence the loose portion of the organ is very short. It deviates again very widely from its ordinary appearance in consequence of not being perforated by an urethra: or perhaps we may say that the urethra, like the urinary bladder, is laid open. The scrotum is divided into two lateral folds, each containing its testis. In the female, the labia are wide apart, instead of being joined by the usual commissures; the nymphæ deficient, &c. We shall give a description of the appearances, in the case of a male and a female, which will serve as specimens of the structure; the same description, in all essential circumstances, will apply to the other instances.

Mr. A. Cooper has described the external appearances and the dissection of a female in the Edinburgh Medical and Surgical Journal, vol. i. p. 129, with a figure: another plate, representing the external appearances, is given at p. 42. This person had from birth a fungous tumour at the lower part of the abdomen, from which the urine was discharged involuntarily; this infirmity disabled her from gaining a subsistence in service, and drove her to the necessity of begging in the streets of London, where she died, at the age of twenty-two, from the effects of want, and exposure to the severity of the weather. The fungus, forming three projections, occupied the region of the pubes, extending as far as the usual situation of the symphysis. It was red, spongy, and very vascular, extremely sensible, and it bled upon the slightest irritation. The urine frequently trickled from the lower part of the tumour; and if any thing was given her to drink, the urine began to flow by drops in a few minutes; but if she made any considerable effort with the abdominal muscles, a small stream of urine spouted from each side of the surface of the tumour. The openings, through which it was discharged, were sufficiently large to admit the introduction of a small probe, and were situated,

situated, one on each side of the tumour, near to its junction with the skin, and towards its lower edge. Just above the tumour a cicatrix was observed; which was the only appearance of umbilicus; so that the umbilical vessels had passed through the parietes of the abdomen near the fungus, instead of at the usual place. The labia pudendi receded from each other more than usual; the nymphæ and meatus urinaris were wanting, the lower part of the fungus occupying the usual situation of the meatus and glans clitoridis. The vagina had its usual situation. The bones of the pubes were separated to the distance of an inch and a half or two inches from each other. The urinary bladder appeared from the abdomen as if forced through the aperture of the skin and abdominal muscles, with the anterior portion wanting, so that the fungous surface on the abdomen was the back of the bladder, with the ureters terminating in it. It adhered firmly to the margin of the abdominal muscles and skin, and appeared from within puckered at its edges. The ureters, which opened through the lower part of the fungus, were uncommonly large, equal in size indeed to the rectum, and had served the purpose of reservoirs. The kidneys were also more than double the usual size, owing entirely to their pelves and infundibula being enlarged, for the secreting part did not appear altered.

The instance, which we shall relate of the male, is described by Dr. Baillie in the transactions of a Society for the Improvement of Medical and Surgical Knowledge, vol. i. p. 189. Immediately above the usual situation of the symphysis pubis, there was a vascular pulpy mass of about two inches by one and a half. It was seated in a deep bed, scooped out, as it were, from the lower part of the skin and muscles of the abdomen, and covered thickly with a viscid mucus. At the upper edge of this mass the skin was in one part finer than is natural, and a little puckered; this was all the appearance of navel. The ureters opened on two projecting tubercles. At the lower edge of the pulpy mass, and about its middle, were two distinct rounded orifices, the openings of the vasa deferentia and vesiculæ feminales. A little above their level was a considerable canal, large enough to admit a goose-quill, and leading to the substance of the prostate gland. About half an inch below the vascular mass the penis was seen, of the common size with respect to the transverse diameter, and a little more than an inch in length. The whole of its upper surface was somewhat hollowed, and had a finer skin than the common covering. Near its extremity, the canal corresponding to the urethra opened by a pretty large oval orifice. Under the glans there was a loose fold of skin corresponding to the prepuce, and a chord like the frænum. There were two considerable oblong swellings at the groin, covered with hair, and terminating below in a corrugated skin forming the scrotum.

On the inside, corresponding to the situation of the vascular mass, there was a projection, resembling the back of the urinary bladder, consisting of an arrangement of muscular fibres similar to those of the bladder, and perforated by the ureters. The latter tubes were larger than usual. The umbilical vessels terminated at the fine puckered skin above the vascular mass. On each side of the substance, corresponding to the bladder, the recti muscles passed, to terminate in the ossa pubis, at nearly four inches distance from each other. The prostate and vesiculæ were about one-third of the ordinary size. There was a canal corresponding to the urethra, in the corpus spongiosum. The testes were of the usual size and structure. In the front of the pelvis there was a deficiency of bone for nearly four inches, filled by a broad ligamentous membrane.

For numerous references to the other recorded cases of

this kind of mal-formation, see two papers by Dr. Duncan, jun. in the Edinburgh Medical and Surgical Journal, vol. i.

It has been observed much more frequently in the male than in the female subject. Many of the individuals have exhibited themselves for money, and have often been supposed to be hermaphrodites; a supposition which they have encouraged for the purpose of increasing public curiosity. On this subject, as well as on all those unusual formations of the sexual organs, which have given rise to the notion of a mixture of the two sexes; see the article GENERATION, under the head of *Hermaphroditism*.

These cases prove to us clearly, what we should have supposed a priori; viz. that the urinary bladder is not a part essential to the body, but subservient only to our convenience and comfort, by retaining the urine, and preventing its constant discharge. A person may exist in perfect health and strength, although the urine should run off as it is secreted.

c. *United Eyes*.—An union of the two eyes into one, which is placed under the middle of the forehead, in the situation of the nose, which is deficient, is not an uncommon kind of monstrosity: it seems to realize the ancient fables of the Cyclops. This single eye is large, and has generally the appearance of being composed of two confounded together. Thus, each lid is composed of two, united in the middle by their extremities, and having their respective Meibomian glands, &c. In one instance there were two optic nerves joined into one, two lacrymal glands, and one large crystalline lens. In another an iris almost double, a simple lens, two lacrymal glands. Indeed, in all the instances there have been more or less plain marks of the apparently single organ being composed of the parts of two eyes.

This kind of formation is not uncommon in animals. Haller dissected a cyclopic lamb; the upper eye-lid was composed of two, the lower deficient. There was a single optic nerve, and one set of muscles. All the parts of the eye were simple, but unusually large. De Monst. lib. i. cap. 12. For other examples, see Soemmering, p. 31, in the pig; Memoires de l'Acad. des Sciences, 1703 and 1744, in the dog; Philos. Trans. No. 456, in the sheep; Buffon, Deser. du Cabinet du Roi, t. xiv. p. 392—394, in the dog and pig; Hist. Naturelle, t. vi. p. 58, in the cat. See also the description of the middle eye in the double head dissected by Soemmering in the latter part of this article.

d. *Spina Bifida*.—A division sometimes occurs in the posterior part of the vertebral canal, formed by the spinous processes of the vertebrae, and is attended with a tumour, caused by a protrusion of the membranous lining of the canal, and filled with fluid. We have seen the spinous processes deficient through the whole vertebral column. See *SPINA BIFIDA*.

e. *Imperforations*.—The termination of the rectum in a cul-de-sac, where the anus is deficient; the termination of the œsophagus in a similar way; the confusion of the bladder, uterus and rectum into one mass, without any external opening, all belong to this class.

f. *Imperfect Extremities*.—The extremities present various imperfect arrangements, which do not, of themselves, occasion the fetuses, in whom they occur, to be called monsters. The club-feet, in which the foot is turned inwards or outwards on the leg, are of this kind. (See FOOT, *Distortion of*.) The fingers or toes may be united together by the skin, the bones, muscles, &c. being perfect. Haller saw a girl born at the sixth month, with both hands unnaturally curved (*manus utraque contortuplicata*) The thumb was crooked and not well formed: there were three other fingers united into one mass, with distinct nails; the middle of these



these was twice as large as the others. In the feet, the great toes were well formed; the four other toes were arranged in the natural direction, and perfectly formed, but united laterally by the skin. (*Opera Minora*, t. iii. p. 37.) These unions of the fingers are not rare, and they do not affect the essential structure, as the parts, when artificially separated, can execute all the usual motions.

Sometimes the limbs are quite mis-shapen, and end in one or two small and ill-formed parts, holding the place of fingers.

g. *General Malformation*.—A very considerable malformation is described by Dr. Clarke, in the *Philosophical Transactions*, vol. 83. After the birth of a healthy child, another substance contained in the usual membranes, and connected with a placenta, was expelled: it had an oval figure, and was covered by common integuments. There were two projections, each ending in three imperfect toes, and another like a finger. It consisted internally of a homogeneous fleshy and vascular substance, without any muscular fibres, and having the umbilical vessels distributed through it. It contained an os innominatum, os femoris, tibia and fibula. At the upper part, and towards the inside of the os innominatum, was placed a little portion of small intestines, loosely connected by their mesentery to the posterior edge of that bone, and covered by peritoneum. No other parts could be traced in this production; there was not the least vestige of either brain or nerves.

Another remarkable instance of general malformation occurs in the child contained in the body of another, described in the latter part of this article.

We might carry this enumeration to a much greater length, by collecting what has been observed by various authors, but the enumeration would be very tedious, and not instructive. We refer therefore on this subject to Haller's work *De Monstris*, contained in the 3d vol. of his *Opera Minora*, lib. i. § 8. We may state, in general, that where any principal organs are wanting, or any great deviation occurs in leading points, there is always great confusion in the subordinate parts. In the case just quoted from Dr. Clarke, the want of the viscera produced a disturbance of the whole fabric; and in other examples, where there has been no heart, all the rest of the body has been very irregularly framed.

h. *Resemblances of Animals*.—The numerous examples of resemblances to animals must be referred to the imagination of the observers, as more exact modern observation does not at all confirm them. We find fœtuses described with the face of a monkey, ass, dog, hare, goat, calf, sheep, cock, skate, lizard, locust; with the head of a cat, horse, or calf; with the penis of a dog, or horse, &c. &c. &c. To the same class belong the calves, sheep, and pigs, with human heads, &c. &c. See Haller, *ubi supra*.

2. *Monsters with unnatural Position of Parts*.—The second is the least common kind of monsters. We cannot include under this description the transpositions of the viscera, as the external appearance is natural, and the functions are performed regularly; nor can we arrange in the class of monsters the examples of perforations in the diaphragm, where a greater or smaller proportion of the abdominal contents passes into the cavity of the thorax. In the latter case the viscera may have taken the unnatural situation before birth, and then death follows birth very quickly, from the impediment to the free action of the lungs, or they may not pass into the thorax until some subsequent period of life. For references to several cases of this kind, see Lawrence's *Treatise on Ruptures*, p. 482, note.

Protrusion of the abdominal viscera at the navel may more justly be regarded as a monstrous formation. This exists in very various degrees, from a small tumour, holding a few turns of intestine, to a large pouch, containing the liver, stomach, spleen, and all the moveable viscera of the abdomen. Sometimes these organs are all completely uncovered, lying on the surface of the body, without any abdominal muscles at all; and the same formation may extend to the chest, leaving the heart and lungs bare. Hence the parietes of the whole anterior and lateral parts of the abdomen and chest are deficient. See the *Treatise on Ruptures* quoted above, chap. xvii. sect. 1, and Haller, *De Monstris*, lib. i. cap. 5.

The same kind of protrusion of the abdominal viscera at the navel, is said by Haller to be frequent in the common fowl, and not to be uncommon in other animals. We have seen a calf with the abdominal and thoracic viscera completely uncovered.

In a monster delineated by Soemmerring, tab. 8, two ill-formed fingers projected from the left breast: the os humeri, and a bone connected with it, were under the integuments; the scapula and clavicle in their natural situation. *Abbildung und Beschreibung einiger Mißgeburten*, &c.

Where there has been only one eye, a kind of monstrosity that has occurred in the human subject, and in some animals, as the pig, sheep, and calf, it has been placed under the middle of the forehead, in the situation of the nose.

3. *Monsters with deficient Parts*.—a. *Want of the Brain and its Coverings, and of the Spinal Marrow*.—An entire want of the brain, and of the coverings which ordinarily belong to it, is a very common occurrence; and it constitutes what have been commonly called acephalous (headless) fœtuses. All the upper convex portion of the frontal bone, the whole of the parietal bones, the squamous parts of the temporal bones, and the greater part of the occipital bone, behind the foramen magnum, are deficient in these cases. Instead of the brain, there is an ill-shaped mass of bone, the basis cranii, covered by a thin membrane: the latter forms sometimes a considerable soft mass, covering the basis of the skull: behind this there is an opening, leading into the vertebral canal. The soft vascular membrane is united at the edge of the cranium with the common integuments, and hair grows on the latter in this situation, although there is none in the corresponding part, nor within some distance of it, in individuals naturally formed. The neck is remarkably short, so that the head seems to lie on the shoulders, and sometimes there is a continuity from the chin to the chest. (See Soemmerring, tab. 3.) In one instance, Haller found only five cervical vertebræ. The eyes, viewed in connection with the retreating surface of the head, give to the whole a striking resemblance to the head of a cat; so that these fœtuses have been called in Germany cats' heads (*katzten-köpfe*). The body is well formed in every other respect, and generally reaches the full size. The medulla spinalis, and the different nerves of the brain begin at the openings, by which they usually go out of the head, and are perfectly formed in all respects. It has been observed by Soemmerring and Morgagni, that most of the acephalous monsters are females. Hewson, Meckel, and Soemmerring found in many instances, that the renal capsules were very small in these brainless children. Soemmerring, p. 7.

These children generally die very soon after they come into the world: but they have sometimes lived many hours, cried, sucked, &c.

In one case, where the bones were wanting, but an imperfect cerebrum seemed to exist, the child lived six days. The child



child was perfectly formed, excepting the head, and of the usual size. It took no food, and had no evacuation. Respiration went on naturally: it did not cry, but often made a hideous whining noise. When the soft substance at the top of the head was touched, general and violent convulsions took place. No signs of voluntary motions appeared, and the mother had less feeling of the child in utero, than in her former pregnancy.

See the work of Soemmerring already quoted, and Sandifort's *Anatome infantis cerebro destituti*, Lugd. Bat. 1784.

Want of the spinal marrow is sometimes observed in the same fœtuses which have no brain. We have seen an instance in which the whole of the spinous processes were deficient, so that the spinal canal was completely exposed; the place of the medulla spinalis was supplied by a vascular membrane, like that covering the basis crani in acephalous monsters, united in the same way to the surrounding skin. A similar deficiency was observed by Soemmerring, p. 21.

b. *Want of the Heart.*—The instances in which there has been no heart are not very rare. Mr. Brodie met with an example in a fœtus nearly of the natural form and size. There was no communication between the trunks of the arteries and veins. The vena cava of the fœtus was continued to form the umbilical vein, and the internal iliac artery of one side was reflected to form the umbilical artery. There were defects in several other parts of this fœtus: the fingers and toes were not perfect, nor in the right number; the palate was divided, the liver deficient, and the œsophagus terminating in a cul-de-sac. Other cases of less perfect fœtuses without hearts, are mentioned in the *Memoires de l'Acad. des Sciences* for 1720 and 1740. *Phil. Trans.* for 1767. There were also two in Dr. Hunter's collection. See Mr. Brodie's paper in the *Phil. Trans.* for 1809. We have seen one instance in which there was no heart: the brain and medulla spinalis were also deficient. The formation of the body and the size of the limbs were for the most part natural, but the fingers and toes here were below the ordinary number. The extraordinary malformation described above from Dr. Clarke, belongs also to the present division, as exhibiting an instance of want of the heart and brain; also that of the fœtus found in the body of a child described towards the end of this article.

Monsters, in which considerable parts are wanting, seem peculiarly likely to assist in the prosecution of physiological researches. If we never saw animals, except in a perfect state, we could not form just ideas of the comparative importance of the different organs. And if we attended only to the complicated structure of the more perfect animals, we should probably conclude that the connection of parts found in them was essential to the execution of vital functions. Of these parts, the brain and nerves, the alimentary canal and its appendages, the heart and lungs seem to be of such importance in the machine, that we should probably conclude the functions of life could not go on without them. But, in the simple animals, which compose the lower orders, many of these parts are not found; although they are capable of performing the most important animal functions. This great simplicity of structure is found chiefly when the body is homogeneous, not consisting of parts so different from each other as skin, viscera, muscles, bone, &c. We might, therefore, still suppose, that all the complicated mechanism, found in the more perfect animals, is essential to the construction of such heterogeneous substances, as those of which they consist. The monsters just described prove that this is not the case; they shew us that cartilage, bone, ligament, cellular sub-

stance, membrane, intestine can be formed where no brain or nerve or heart exists, and where there is nothing further than the actions of the vascular system; and they lead us to conclude that the formation and nutrition of our organs are the functions of the blood-vessels only. At all events they exclude the brain, nerves and heart from all participation in this process.

The nature of fœtal existence is considerably elucidated by these monsters. Superficial observation will convince us that the life of the fœtus is very different from that of the animal which is born. The former is the most simple kind of vitality: it includes merely the development and growth of parts, which, although useless to the animal in this state of its existence, are essential afterwards. That the lungs are of this kind, is generally admitted; we must adopt the same conclusion concerning the heart. A little reflection shews us, that the brain and nerves are equally inessential to the fœtal existence. The nerves transmit impressions from without; the brain perceives these, reflects and wills; the nerves again convey the influence of the brain to the muscles. Although we cannot clearly prove the point, we think there is very little reason for hesitation, in affirming that none of these processes take place in utero: consequently, that the brain and nerves are completely inactive. The alimentary canal, and the organs connected with it, the urinary apparatus, which dispose of the residue of nutrition, are suited to the subsequent stage of existence, and bear an obvious relation to the mode in which the body is nourished after birth; they are dormant while the animal remains in utero, during which time the materials of its nourishment and growth are drawn from the mother, through the placenta and umbilical chord. It is hardly necessary to say anything of the generative organs, as they are not called into action until many years after birth, and are then not very closely connected to the rest of the system; at least their absence or inaction does not produce any consequences that endanger the existence of the animal. We should infer then, that the whole growth and formation of a fœtal body depend on the actions of the vascular apparatus, which appear from Dr. Clarke's case to be fully equal to the task.

That beings so imperfectly formed are incapable of executing the functions necessary for the continuance of existence after birth, is very clear. Respiration is performed by muscles deriving their power from the brain, and, consequently, cannot take place where there is no brain. If, in any instance, life and respiration have been kept up for a short time, there has probably been an imperfect brain; as in the case related above, where the child lived six days. All our observations on living animals, too, concur in shewing that the heart's action is essential to life. Without the alimentary canal, no supply of nourishment can be received.

The acephalous monsters shew us the independence of the nerves on the brain, so far as their formation goes; and they evince very clearly the independence of the formation and growth of the organs in general on the brain. For these individuals are perfect in the size and form of all the parts: any organ or limb could not be distinguished from that of the most regularly constructed fœtus with a brain.

If the anatomy of the vessels were well known in cases where there has been no heart, and if the circulation could have been observed, we could not fail to derive some interesting information: hitherto we know too little on these points to enable us to draw any inferences applicable to the physiology of the circulation after birth.

e. *Want of other Parts.*—The examples of deficiency of less important parts are numerous. Where there has been only



## MONSTER.

only one eye, the nose has been wanting: the ears have sometimes been deficient. We have heard of a child, in whom the skin was smooth and not perforated in the situation of the ear, who had the sense of hearing. We met with a fœtus, in which the soft palate did not exist, and the tongue had passed into the nose, having a deep impression on its surface, corresponding to the septum narium. This child must have died immediately after birth, as it could not have breathed.

Various deficiencies occur in the extremities, from the want of some fingers or toes to the entire want of the whole limbs. Individuals have been born without either arms or legs. (Haller *De Monstris*, lib. i. cap. 10.) We have seen a cat without fore legs, and a similar deficiency has been noticed in the dog and horse. (See Haller, lib. i. cap. 10.) The want of the usual abdominal and thoracic coverings we have already mentioned.

The irregularities in the descent of the testis have sometimes been noted as monstrous formations. See the description of the descent of the testis in the article *GENERATION*. When one testis only has descended, the individuals have been called monorchides; and where both have been retained in the abdomen, anorchides: as if there had been original deficiency.

4. *Monsters with supernumerary Parts*.—In the last division of monsters we shall consider, under separate heads, instances of some additional parts connected to bodies otherwise perfect, of united fœtuses, and of fœtuses involved in the bodies of others.

a. *Superfluous Parts in Bodies otherwise perfect. Supernumerary Fingers*.—Supernumerary fingers and toes hardly constitute a sufficiently striking deviation to deserve the name of monstrosity; there may be five fingers, or a small additional thumb in the hand; and six toes in the foot. In some instances this variety has existed in several individuals of the same family, and has been transmitted through two or more generations, both by the father and mother. See the article *GENERATION*, towards the end, on the theories concerning that subject; also Haller *De Monstris*, lib. i. cap. 9.

Analogous appearances have been noticed in animals, as the dog, pig, sheep, and common fowl. Supernumerary horns sometimes exist in the cow, sheep, and deer; and in the *ovis polycerata* this variety seems to have become permanent.

The existence of herniæ and other tumours in the scrotum has given rise heretofore to the notion of supernumerary testicles: hence the triorchides, pentorchides, &c. There are never more nor fewer than two testes naturally.

*Supernumerary Extremities* are by no means uncommon in animals. Haller dissected a dog, in which there was a large broad bone between the two ossa innominata, supporting a leg, to the lower end of which two feet were connected. In a chicken, which he examined, there were two rumps, with a bone placed between them and supporting a supernumerary leg. *Ibid.* c. 15.

Morand dissected a full-grown and perfectly well-formed sheep, in which there were two additional lower extremities projecting between the hind legs. The anus and penis were double. An unusual bone was placed between the two ossa pubis, and had acetabula for the supernumerary thighs. The bones of these additional limbs were regular; but there were no muscles. The ileum divided into two tubes, each of which was continued into a large intestine: the kidneys, testes, &c. were doubled. The aorta and vena cava bifurcated; one branch going in the usual course, and the others being distributed to the supernumerary parts. (*Mem.*

*del'Acad. des Sciences*, 1733, p. 141.) For a similar instance in a cow, where the additional parts adhered to the spine, see the *Philos. Transact.* vol. xlix. p. 183.

Examples of these additional limbs in all the domesticated animals, as the horse, dog, cat, cow, sheep, pig, goat; also in the hare; in the common fowl, duck, goose, sparrow, dove, goldfinch; and in the frog, are mentioned in the work of Haller.

*Additional Head*.—Examples of any other parts, besides the limbs, being thus attached to bodies otherwise perfect, are less common: an ox is mentioned in the *Philosophical Transactions*, vol. xlix. with an additional head attached under the lower jaw; and a cow attained its full size with two heads and necks.

Some instances have occurred, in the human species, of a more or less considerable portion of another individual adhering to some part of the body. The Indian child with a double head, described by Mr. Home in the *Philosophical Transactions*, vol. lxxx. is a rare example of this kind.

The child lived to the age of two years, when it died from the bite of a cobra de cabelo. The woman, who acted as midwife, terrified at the strange appearance of the double head, endeavoured to destroy the infant by throwing it on the fire, where it remained long enough to have one of the eyes and ears considerably burned. The body was naturally formed, but the head appeared double, there being, besides the proper head of the child, another of the same size, and to appearance almost equally perfect, attached to its upper part. This upper head was inverted, so that they seemed to be two separate heads united together by a firm adhesion between their crowns, but without any indentation at their union, there being a smooth continued surface from one to the other. The face of the upper head was not over that of the lower, but had an oblique position, the centre of it being immediately above the right eye. When the child was six months old, both heads were covered with black hair in nearly equal quantity. The neck of the upper head was about two inches long, and the upper part of it terminated in a soft tumour like a small peach. The eyes of both heads moved at the same time, but those of the superior wandered in different directions. The irides of the upper contracted on exposure to light; its eyelids were never completely shut, remaining a little open, even when the child was asleep. Tears flowed almost constantly from them, but never from the eyes of the lower head, except when crying. The superior head appeared to sympathise with the child in most of its natural actions. When it sucked the mother, satisfaction was expressed by the mouth of the superior head, and the saliva flowed more copiously than at any other time; for it always flowed a little from it. When the child smiled, the features of the superior head sympathised in that action. When the skin of the superior head was pinched, he seemed to feel little or no pain, at least not in the same proportion as was felt from a similar violence being committed on the lower head or body. No pulsation could be felt at the age of six months in the situation of the temporal arteries in the upper head; but the superficial veins were very evident.

The monstrous head was brought from the East Indies to this country, and deposited in the museum of Mr. John Hunter. The two skulls are nearly of the same size, and equally complete in their ossification. The frontal and parietal bones, instead of being continued over the top of the head, meet each other, and are united by a circular suture. The two skulls are almost equally perfect at their union; but the superior skull, as it recedes from the other, becomes imperfect,



imperfect, and many of its parts are deficient. The number of teeth is the same in both. There is no septum of bone between the two crania, so that the two brains must have been contained in one bony case.

Winslow mentions an Italian, whom he saw in 1698, who had another head, much less than his own, connected to the chest, below the cartilage of the third rib. This had been baptized separately from the other. It adhered by the lower half of the right side of the face and head; so that the right ear and surrounding parts were not seen. All the rest of the head and face, with the hair, and most of the neck, the eyes, nose, mouth, teeth, and chin, were very distinctly visible. This Italian felt whatever affected the additional head. *Mem. de l'Acad. des Sciences, 1733, p. 366.*

*Imperfect Portion of another Body attached to a perfect one.*—The same anatomist saw a girl, twelve years old, well formed, and of the accustomed size, with the abdomen and lower extremities of another body hanging from the left side of the epigastric region. This second body was small; it had a row of vertebrae connected to the sternum of the larger; and faeces were discharged from it. The formation of the parts composing it seemed natural in every respect. The child felt perfectly whatever touched this additional body. Winslow found, on dissection, that the ileum bifurcated, and each branch went into a corresponding large intestine. The latter, in the little sister, terminated in a common receptacle with the ureters. There were no sexual organs. The bones of the sister were well-formed, but there were no muscles; the interval between the skin and bones being filled merely with fat, blood-vessels, and nerves. In this instance, there was a doubt whether the child should be considered as one or two; and Winslow was sent for, not only to afford his medical assistance, but also to consider whether extreme unction should be administered to the little sister, as well as to the entire body. *Mem. de l'Acad. 1733, p. 366.*

A more remarkable instance, in which at least the additional being was more perfect, was seen and is described by Bartholin, who viewed it, as he says, with great astonishment (cum stupore), and Zacchias; and was exhibited in many of the principal cities of Europe.

The individual, named Lazarus Colloredo, was 28 years old, well-formed, and of the usual stature: he had a deformed twin brother hanging by the chest from the lower part of the sternum, who had been christened by the name of Johannes Baptista. The latter had two arms, with three fingers only on each hand, and one imperfect lower extremity. The head was larger than that of Lazarus, but not well-formed; it was well covered with hair, and there was no beard: the trunk seems, from the figure, to have been very imperfect. The eyes were generally closed, the mouth open, and yielding a constant flow of saliva. Respiration was hardly perceptible: there was a pulsation in the chest. The hands, ears, and lips could be moved. John Baptista was nourished by the food taken by Lazarus. (*Histor. Anatom. cent. 1. hist. 66. See also Zacchias Question. Medico-Legal. lib. vii. tit. i. quest. 9.*) The latter author, who was chief physician in the ecclesiastical states, enters into a discussion whether John Baptista had a rational soul, which he determines in the negative; and hence seems to have doubted whether it was right for him to have undergone the holy rite of baptism. "*Scio hunc puerum scilicet a perfectio fuisse baptizatum: an recte, et secundum rationem id factum, neque affirmo, neque nego: quod enim ecclesia catholica in hoc determinet, expecto, cui et in hoc et in ceteris omnibus humiliter me subijcio.*" *Ibid. quest. 4.* He determines that the addi-

tional beings in these cases are "*additamenta ex luxuriante femine enata, et quod nullam, ne per somnium quidem rationalis animae potentiam fortirentur.*"

Ambrose Paré relates an instance of a similar description, where another man, with all his parts, excepting the head, was attached to an individual forty years old. (*Lib. xxiii. cap. 3.*) Amatus Lusitanus has an example in a well-formed boy of six years old, from whose navel another imperfect being, without a head, was suspended. *Curat. Medicin. cent. iii. hist. 57.*

In the lxxixth volume of the Philosophical Transactions, there is an account of a handsome and well made Gentoo boy, of good sense and sagacity, who has a little brother suspended by the pubes, and consisting of pelvis and lower limbs. He feels perfectly what is done to the brother, but cannot move the legs and feet, which are cold.

These are the most detailed and authentic cases; references to others, both in the human subject, and in animals, may be seen in Haller, *ut supra*, cap. 20. These approach very nearly to the double fetuses, in which there appears to be an union of two, originally distinct.

b. *United Fetuses.*—These form a very numerous class of monsters, both in the human subject and in animals, and we meet with this kind of unnatural arrangement in almost every possible degree, from the slight indications of a head composed of two joined together, to two bodies, apparently perfect in all their parts, adhering at some point to each other. We might form a series, having at one end a body naturally formed, and at the other two natural bodies joined, in which the intermediate gradations should be filled by individuals differing almost imperceptibly from each other. Part of such a series, in that kind of monstrosity in which there is a double head, is exhibited in the work of Soemmerring, tab. 2. to 7.

In all these specimens, the parts placed at the point of union are the most worthy of notice; they are not like the organs of a natural body, but exhibit unions of the parts of two bodies in various degrees and shapes. If it were possible for two heads, from each of which one-third or one-fourth had been cut away, to be joined and grow together by the cut surfaces, we should have the appearances exhibited in these cases. In the same way, two tracheas or œsophaguses, coming from the two halves of a double head, are united below into one tube, or the small or large intestines from two distinct upper portions of a body are joined into one canal, or the blood-vessels united in the same way, or the skeletons joined in various manners; or, on the contrary, the organs may be simple above, and bifurcated downwards, to produce double parts for double bodies. In all such instances, organs are formed, for which there is no model in the common structure; the points of bifurcation, or division of the various canals mentioned above, are like nothing in the naturally formed body. We shall proceed to notice a few particulars.

*Fetuses with compound Head.*—The slightest deviation from the common structure in this direction is exhibited in Soemmerring's second plate. The head is very broad; there are only two eyes, placed far apart; and the nose and upper lip are divided by a considerable fissure. On each side of this fissure there are about two-thirds of a nose. The third plate represents a head of such size and form as would result from joining two two-third heads. The halves of this double head are symmetrical, and resemble each other in all respects, the features are exactly alike, and each upper lip has a cleft in it. In the following instances the same close resemblance of the features is observed, and in one there is a hare-lip on both sides, yet the right is rather larger and better formed than



than the left side; and the same circumstance is noticed in the other instances represented by this author; and he conceives that it admits of explanation by the circumstance of the right half being nearer to the heart. In the middle of this broad head, of which each lateral division contains its eye, nose and mouth, there is a large unnaturally formed eye. Each lid is manifestly composed of two, united by their outer extremities, instead of joining corresponding extremities of the lower lids to form external angles; the opposite ends of these lids are joined and form two angles turned towards the noses of the two halves of the head. The globe, observed externally, seems composed of two two-thirds united together; two optic nerves enter it behind, and the number of muscles exceeds that of a single eye. There were two lenses, two choroid coats, and irises. A sharp projecting edge of the sclerotic, corresponding to an external depression, formed the back of a septum dividing the interior of the globe; the two choroids, lying in contact, continued this partition, but it did not reach to the cornea. The two irises were united, and formed one large pupil; a pointed projection in the middle of the upper and lower edge of this, as well as its breadth, shewed that it was made of two joined together. Under this large eye, there was a broad surface composed of the two cheeks and chins united; a depression shewed the division of the right and left cheeks. The œsophagi and tracheæ of the two halves joined at the bottom of the neck. In the fœtus, represented in the fifth plate, the face is composed of two three-quarter faces. There are four well-formed eyes; the outer angles of the two middle eyes exhibit the ordinary appearance, but are united in the middle of the head. The sixth plate exhibits a still nearer approach to two heads. The two inner eyes are apart from each other; a depression above marks the distinction of the two heads, and the bottom of this is filled by an irregularly formed external ear, appearing as if it had been made by blending the opposed ears of the two heads. In the preceding instances there had been only two ears; here there were three, two of the ordinary structure and a third compound one. A still more complete division of the head into two lateral heads is shewn in the 7th plate. There are in this four ears, and the two middle ones are in contact at their convex surfaces. From this part a deep depression runs to the breast, marking the distinction of the cheeks and chins.

The cases in which the head is single, but composed of two imperfect heads united, are followed by others, in which there are two completely distinct heads, joined higher or lower in the neck; if we add to those already described the three following cases, the series will be complete; Sahler Diff. de Fœtu bicipiti, Defil. 1786: Prochaska Annot. Academ. fascic. 1. tab. 1. Monro on the Nervous System, tab. 8.

*Fœtuses with two Heads, joined in the Trunk.*—The double parts of the body are continued farther down in this than in the preceding class. There are two heads and necks and two arms; the double parts join in the chest, and the body is single below. See Hist. de l'Acad. des Sciences, 1745, p. 29.

Or the union may take place lower down in the chest, or in the abdomen or pelvis; there are three or four arms in such cases, and two lower limbs. In a fœtus described by Duverney, Comm. Acad. Petropol. t. iii. p. 188, there were two imperfect arms between the two necks. The two inner rows of ribs joined together, and did not run on to the sternum; there were three cavities in the thorax, a right and left proper, and a middle common one, and two hearts. In another there were two perfect lateral upper extremities,

and a middle imperfect one; a double spine as far as the loins; two hearts, and aortæ, which united below the diaphragm. (Phil. Transf. N° 138.) In one examined by Lémery, there were two vertebral columns, and tracheæ, double lungs, a single heart composed of one auricle and ventricle, two aortæ joined in the back, two stomachs and duodena, which united into one intestine. (Mem. de l'Acad. des Sciences, 1724, p. 63.) In another the vertebræ were joined in the back; there were two œsophaguses and one stomach, a double heart, and large vessels united in the loins. (Haller, Opera Minora, p. 85.) A child with two heads and chests, and four upper limbs; one pelvis and penis, and two lower limbs is described in the Journal des Savans, 1684, p. 27. For an account of a much greater number of these cases; and numerous references, see Haller De Monstris, lib. i. cap. 21—28.

*Fœtuses double below, and united above.*—There is a class of fœtuses different from the former, in which a single head is united to a double body. Haller has given a very detailed account of a pig of this kind. The face and upper part of the cranium were single in this animal, the lower portion of the cranial cavity, and all the organs thence downwards were double. The two bodies, which in size and form corresponded to the ordinary model of the species, adhered together from the navel upwards. All the parts towards the front of the head were single. There were two occipital bones, divided by an additional petrous bone; they rested in front against a single sphenoid. Two additional occipital bones were joined into a pentagonal piece resting on the additional petrous portion. The occipital bones were supported by their respective atlantes, and there were two skeletons from this point downwards, differing from the ordinary arrangement only in the sterna. Each of these received a row of ribs of each body; that is, to one sternum were attached the right ribs of one chest, and the left of the other, and *vice versa*. The cerebrum was simple, with fissured medulla oblongata, two cerebella, two medullæ spinæ, two basilar arteries, and two pituitary glands. The nerves were simple from the first to the sixth pair; there were four auditory nerves and paria vaga, and a single ninth pair for the single tongue. There were two larynges, with one pharynx and œsophagus between them. Above the navel the abdomen was single, and double below; there was one stomach and small intestine; the latter bifurcated towards its end, and the canal from this part was double. There were two livers, spleens, and pancreases. The thorax was simple in the middle, and extended on each side into two cavities resembling each a simple thorax; and containing the lungs as usual. There were two hearts, one of which received the veins of the left body, and sent an aorta to the right, while in the other these relations were reversed. Just behind their arches, the aortæ were joined by a large but short transverse communicating branch. (Haller, ut supra, cap. 16. with five figures.) In the same place a multitude of examples of this formation in animals, as the dog, cat, goat, horse, hare, rabbit, fowls, &c. is quoted. There are also many instances in the human subject; see cap. 18.

*Two complete Bodies united.*—Through the preceding classes there is a gradual approach, from the single body to the union of two, in other respects, perfect bodies. The most complete dissection of a double child is furnished by Haller. The mother had brought forth three well-formed children, and carried this double production the full time. It consisted of two well-formed girls, of the ordinary size, with abundant hair, perfect nails, and rather elegant features. The chests and epigastria were united, the two bodies being



free in every other part. The labour was very difficult and tedious, and attended with the death of these children, which, but for this reason, might probably have survived, their organization seemed for perfect in all respects. The umbilical chord contained four arteries and one vein; the abdomen was single above the navel, and double below; it contained one liver, to which there were attached two gall-bladders. The greater diaphragm was simple, and terminated below in double appendices for the two bodies. A large single heart was placed in the middle of the chest; but all the blood-vessels were double. The pulmonary veins of one body opened into the superior cava, while in the other there were two superior cavæ, and the pulmonary veins had distinct openings in the heart. The latter organ consisted of one auricle, receiving the terminations of all the veins, and of two ventricles, from each of which an aorta and a pulmonary artery arose. All other parts were double; indeed there were two bodies almost entirely distinct. The two sterna were both common to the two bodies; each receiving a series of ribs from each child, and a clavicle of each, (loc. cit. cap. 29.) with several figures. In the 30th, 31st, and 32d chapters, Haller has collected a great number of instances of similar monsters both in animals and in the human subject from authors. Generally there has been only one heart, but sometimes two; in some cases there have been four cavities, with the usual blood-vessels, but often fewer. The liver is almost all instances single.

The formation of the bodies is so perfect in many of these cases, that we can discern no reason why they should not continue to live after birth; probably the violence to which they are exposed in parturition, and the duration of that process consequent on this difficulty, may be the cause of their destruction. They have lived for a longer or shorter time in a few instances. Two children joined by the abdomen, double above, and having one pelvis and penis, and two lower limbs, but no rectum, lived seven days, and died within a quarter of an hour of each other. (Journal des Savans, 1684, p. 27.) Another is mentioned in the same work, p. 346, who lived to the age of 28, under James IV. in Scotland: one of the bodies died some days before the other.

The most extraordinary instance of this kind is that of the united twins born at Szony, in Hungary, in 1701, publicly exhibited in many parts of Europe, and among others in England, and living till 1723, when they were buried in the convent of the nuns of St. Ursula, at Presburgh. They were joined at the back, below the loins, and had their faces and bodies placed half sideways towards each other. They had one anus, and one vulva. The viscera were all double, except that the two vaginæ united into one towards the external aperture, and the two recta were joined in the same way. There were two bladders and urethræ opening separately. The two sacra were blended into one, and had a single os coccygis connected to the lower end. The two aortæ were joined into one tube before the division into the iliaes; and the inferior venæ cavæ were united at the same part. They were not equally strong nor well made; and the most powerful, (for they had separate wills,) dragged the other after her, when she wanted to go any where. At six years one had a paralytic affection of the left side, which left her much weaker than the other. There was a great difference in their functions in health and disease. They had different temperaments. Neither the alvine nor the urinary evacuations were always performed at the same time by both sisters; the menses happened at different times, one having them a week or more after the other; sometimes one, some-

times the other would be most disordered at such periods; when one was asleep, the other was often awake; one had a desire for food, when the other had not, &c. They had the small-pox and measles at one and the same time, but other disorders separately. Judith was often convulsed, while Helen remained free from indisposition. One of them had a catarrh and a colic, while the other continued well. Their intellectual powers were different; they were brisk, merry, and well bred; could read, write, and sing very prettily; could speak several languages, as Hungarian, German, French, and English. They died together. Phil. Trauf. vol. 1. G. C. Drieschii historia magnæ legationis cæsareæ, &c. p. 41. Haller, lib. i. cap. 28, and lib. ii. cap. 26, where some other instances are quoted.

c. *Fætuses included in the Bodies of others* —Beings included in the bodies of others are the most uncommon kind of monstrosity; yet we have some well authenticated cases.

In the Gentleman's Magazine for December, 1748, mention is made of a child, born with a large bag extending from the fundament to the toes. It burst a few days after birth, and exposed an irregular mass of florid flesh, in which a hand and foot with perfect fingers and toes could be distinguished. There was no other visible distinction of parts or sex. The child fed heartily.

A fœtus was lately discovered in the abdomen of a boy fourteen years old in Paris: we have seen no detailed account of this occurrence, which is mentioned in the Bulletin de l'Ecole de Medecine, in the Gazette de Santé, 1804, No. 1, and the Journal de Medecine, an. 13.

But the instance recorded by Mr. G. Young in the Médico-Chirurgical Transactions, vol. 1, with four plates, is the most minutely described, and the best authenticated, as the parts were seen at the time by the principal medical men in London. A tumour was perceived nearly from the time of birth in the abdomen of a child, and gradually increased to its death, which took place at the age of nine months. A firm and for the most part thick cyst was placed in front of the abdominal aorta, between the roots of the cæliac and superior mesenteric arteries, attached to the left crus of the diaphragm, and covered in front by the stomach and duodenum, pancreas, and its duct, and transverse portion of the colon. It contained 78 ounces of a limpid fluid, and a rudely formed human fœtus adhering to its surface, by a fleshy cone proceeding from the umbilicus, and measuring one inch and seven-tenths at one end, and half an inch at the other. This production was covered by integuments of the natural appearance, on which there was sebaceous matter, such in all respects as is often met with on the skin of infants recently born. The extremities were distinctly recognizable, and in many respects tolerably well formed, so much so as to have distinct fingers and toes with nails, but exceedingly short and stout. There was something corresponding to the basis cranii, and a considerable portion of the spine, some short ribs, sacrum and ossa innominata, and some bones and joints of the limbs well formed. Very little muscular substance was found in this creature; none on the trunk, a little about the hips, and none in the remainder of the limbs, which consisted of adipous substance. There was neither brain nor spinal marrow, but a distinct plexus of nerves just within the umbilicus, about the commencement of the intestines, to which numerous branches were distributed. There were two locks of hair just below the part corresponding to the head. It had no heart nor lungs, and no abdominal viscera, except a few inches of naturally formed intestine, with mesentery. Two kinds of vessels were distinguished in this production; but it was not practicable



practicable to ascertain clearly the nature of their connection with the cyst. There was a very distinct scrotum and penis.

III. Considerations on the production of these unusual formations.

There is a very important ground of distinction, in conformity to which, on the first view, we separate them into two classes; those which are, and those which are not, capable of supporting life after birth. To the former belong all varieties, and some of the monstrous formations; to the latter most of the monsters, as the headless and heartless children; those with imperforate anus, with communication between the trachea and œsophagus, with uncovered viscera. In the former, there is another distinction between the instances, in which the natural functions are all perfectly executed, and those in which life is continued for a certain length of time with inconvenience and suffering, and then prematurely ended. The varieties of a slighter kind, and in unimportant organs, belong to the first of these divisions; malformations of the heart, and of the urinary organs, spina bifida, &c. to the second. Again, in some kinds of malformation, the vital powers seem as perfect as in the ordinary formation, but the mechanism is imperfect, as in club-foot and other erroneous organizations or deficiencies of the limbs.

It is very clear that the great deviations from the accustomed standard, producing monstrosities, are generally incapable of life; and we can understand the reason of this in many cases, where the heart or brain is deficient, &c. But in other instances, where no such satisfactory cause is apparent, experience shews us that these monsters are generally cut off. We have already observed, in the article EMBRYO, when speaking of the fetus, that it is often ill-formed, smaller than it should be, deviating from the usual proportions, or monstrous, in abortions; so that the vital powers in monsters do not seem adequate to maintain the comparatively simple existence of the foetal state: if, however, they get over this danger, the hour of birth is with them generally the hour of death. There are many possible arrangements, differing from the ordinary type, in which the functions would have been all preserved; but this would interfere with another principle, which seems to prevail extensively in the operations of nature, *viz.* preservation of uniformity in the species.

We should observe, in the next place, that these deviations are not confined to the human subject; they are very frequent in animals. All the kinds of monstrosity have not, we believe, been noticed in the latter; we find no instances recorded of hare-lip, of want of brain and heart, of spina bifida, of malformed urinary organs, nor of such general malformation as is exhibited in the case of Dr. Clark, and in the fetus dissected by Mr. Young. But united fetuses, supernumerary limbs, and unnatural arrangements about the eyes and nose, are very frequent.

We observe further, that such monstrous productions are almost, if not entirely, confined to domesticated animals; at least nearly all the recorded instances justify this assertion. Out of very numerous monstrous animals, of which the descriptions are referred to in the work of Haller, we find very few that can be at all suspected to have been in a state of nature. There are some hares, and one instance of double moles cited from Valisnieri. He refers to three instances of frogs with five feet. Examples of serpents with two heads have not been very uncommon; the same formation has been seen in the turtle and lizard. (See Haller de Monstris, lib. i. cap. 33.) True hermaphrodites, or individuals possessing perfect male and female organs, are not rare among fishes.

We have read somewhere, that if the spawn of a fish be placed in a small vessel, about the time that it begins to be evolved, all kinds of unnatural unions will take place, exhibiting monsters of every description, but we cannot now refer to the place.

Monstrosities are very frequent in the pig; we believe that they are entirely unknown in the wild animal. That domestication should have this effect is not more surprising, than that it should affect the number of young produced. The wild sow brings forth only once a year, and thus has fewer young than the tame one, which farrows twice.

The circumstances just mentioned; the great abundance and numerous kinds of monsters found in the human subject, their comparative rareness and fewer species in the domestic animals, and their probable entire absence in wild animals, lead us to suspect that they owe their origin to something connected with our peculiar mode of existence in this respect; in short, they resemble our diseases, which we believe to be altogether unknown to animals in a state of nature, and to exist in greater number in proportion as they are more and more completely domesticated and rendered artificial. At the top of the scale, whether we regard the number, the complication, or the severity of his diseases, stands the lord of the creation; if he boasts that his arts have subdued both animate and inanimate nature, the nosologist, unfolding his long and appalling catalogue, loudly proclaims that he is defeated, checks his triumph, and convinces him that he has paid too dear a price for empire.

Generation is a function not differing in its essential characters from the other processes of the animal economy. The production of a new being seems, on a superficial view, so much like creation, according to the notions which men have amused themselves with framing on that subject, that they have conceived it to require some preternatural agency. Regarding this business then as the work of God, and having already assumed that all his works are perfect, they maintain that the young animal is originally perfect, and degenerates into a monster through the action of external forces. More accurate observation discloses to us in this affair merely the operation of secondary causes, and exhibits to us the production and development of the fetus as the result of vascular action in secretion and nutrition: in short, however his pride may be offended at hearing it, the simple truth is, that man, considered at the epocha of his first formation, and with respect to his corporal frame, is a secretion.

The function of generation is not more exempt from the operation of disturbing causes than any other in the animal economy. Any violent and sudden impression interrupts it at once by causing abortion; but minor causes, although their effects are not seen, are not to be deemed inoperative. Particular bodily formations, particular mental characters, and dispositions to certain diseases, &c. &c. are transmitted to the offspring. Indeed, how can we expect, that, when all the rest of the being is artificial and vitiated, this one part should be undisturbed; we ascribe then the aberrations from the usual form and structure of the body, which produce monsters, to an irregular operation of the powers concerned in generation, and place them on a level, with respect to their cause, with unhealthy excursions of the nutritive, secretory, or exhalant functions. We only mean, by these observations, to refer the aberrations of the formative process to the same general principles, as the other deviations from the healthy execution of functions, and to protect against the considering them as forming a peculiar case out of the common rules applying to organized beings.

It would not be right, however, to pass unnoticed the commonly



## MONSTER.

commonly entertained opinions, although we entirely reject them; we shall, therefore, make a few observations on some of these.

Physicians for a long time believed, and mankind in general are still firmly convinced, that the mind of the mother exerts a very potent influence on the formation of the child; and that her imagination, or some peculiar mental state, is capable of producing even very signal deviations from the accustomed formation, after the natural development and growth have been very considerably advanced. It has been supposed that a sudden fright will cause a resemblance to the animal or object producing it, and that a violent desire or longing for any thing, particularly if it be not gratified, will cause a resemblance of the thing to be marked on some part of the child's body. The names given to the marks, sometimes observed in newly-born children, shew how generally the opinion has prevailed; *viz.* *nævi materni*, in Latin; *mutter-mahl*, or *mutterfleck* (mother's spots), in German; *envie* (longing), in French. Matrons and nurses, the hereditary priestesses of Venus and Lucina, and the great authorities, to the uninitiated, on all the mysteries of generation, often contrive to keep a mother, doubly anxious for herself and her offspring, in a state of alarm throughout her pregnancy, lest the sight of something frightful or disgusting, the longing after some object, &c. should convert the child in her womb into a monster.

In the first place, monstrous productions are often brought forth, when the mother has been conscious of no cause during her pregnancy, that could be thought likely to produce them. The strong desire, common indeed to both sexes, of being thought capable of executing the generative functions perfectly, and the uneasiness accompanying any supposed failure, induce midwives, where a monster is brought forth, to conceal it from the mother's knowledge, which, as they generally die after birth, is easily done. If, however, she should learn the occurrence, she recalls to her recollection whatever has happened in her pregnancy, and can hardly be at a loss for some longing, or aversion, or fright, to which she refers what might otherwise bring into question her fitness for these important functions. How are the *nævi*, and other unnatural formations to be accounted for, when no mental cause is remembered, or, when the monstrosity not being known to the mother, she never mentions any such occurrence?

A knowledge of the different kinds, and of the anatomical structure of monsters, affords very strong, and indeed incontrovertible proofs of the absurdity of the common notions. The most zealous advocates of the opinion, which indeed only makes the matter more obscure, will hardly contend that the imagination of the mother can annihilate one-third or one-fourth of a head, and adapt to it an exactly corresponding piece of another head, resembling it so exactly in size, form, features, &c. If it should not be difficult enough to account for the production of this symmetrical double head, a harder task remains; *viz.* to explain how the imagination of the mother changes nearly half the body; for the vertebral column may be double, the breast consequently broader, &c. in such an example.

We shall again ask how longing or fright can dispose of the brain, membranes, skull, scalp, &c., as in the acephali? How it can stop up the anus? or destroy the fore-arm and place the fingers at the end of the arm? or annihilate the nose; and bring together and confound in one the two eyes?

Do pigs, horses, hares, &c. long? are pigeons and fowls given to these fancies? or does the same effect arise from one cause in men, and from another in animals? How does

the explanation apply to trees, and other vegetables, in which monstrous productions are not rare?

That the vulgar, who know only the surface of things, and are contented with the most distant resemblances and the loosest analogies, should ascribe the harelip to the sight of a hare, is not very strange; but we should hardly believe, if it were not before our eyes in print, that Heister (*Observ. Med. Miscellan. obs. 14.*) describes an acephalous fœtus with divided lip as the result of such a cause. The mother of a similar child described by Sandifort ascribed the deformity to a fright caused by a monkey. Now what resemblance is there between a hare or a monkey and such a child? What between a hare and a monkey? All the monsters of this description are remarkably alike; in our judgment they do not bear the most remote resemblance, either to a monkey or a hare; and we have already mentioned that they have gained the common name in Germany of cat's-heads. If we go back into times a little more remote, as 1670, we shall meet with children resembling devils. Kerkring (*Spicileg. Anat. obs. 23.*) gives us a figure, with the following inscription: "*Monstrum cacodæmonis picturæ, quam humanæ figuræ, similius.*" The fingers in the engraving have something of the character of claws; and the mother fancied that she had had intercourse with evil spirits: "*jam sibi cum malis genii congressa videbatur.*" The gossips thought the child like an imp; and Kerkring found it in no respect like a human being, but rather like an ugly monkey: "*caput nihil habebat, quod hominem referret. Facies simiæ, eique deformi simillima.*" Is it not very clear that the imagination is much more powerfully at work in these good people, than in the poor mothers? Devils, apes, hares, and cats are all alike to them. It is difficult to contend against such adversaries: if they are driven from their monkeys and hares, they conjure up the phantoms of their brains, and array against us imps, blue devils, and old nick himself.

In cases of harelip, the parts do not resemble the snout of a hare, but are formed in quite an opposite way. The upper jaw-bones are drawn apart, and the face consequently more than usually broad, instead of being narrow and standing forwards, as in the hare. The lip of the hare is not fissured, but merely notched, and covered with long stiff bristles. The fissure of the lip is often the smallest part of the deformity in the human subject: there is a division through the whole of the bony and soft palate, to which a hare's head has nothing analogous.

The productions of the skin, which are compared to strawberries, mulberries, raspberries, &c. are so obviously unlike those objects, that it would be a waste of time to say any thing on the subject. Let it be observed, too, that harelips and other monstrous productions are seen in countries, where there are no hares, no raspberries, cherries, &c. to cause them.

Women generally refer to frights, longings, or other mental impressions, in the latter months of pregnancy: at earlier periods they do not feel the fear of such occurrences. Now monstrous fœtuses are seen at all times of utero-gestation, from the first recognisable existence of the child; and the fœtus is ill-formed or monstrous in a large proportion of abortions, which occur for the most part before the time at which their apprehensions begin.

The child does not participate in most of the bodily affections of the mother, and apparently is uninjured in many very serious and extensive disorders: at least strong and well-formed children are brought forth by mothers, after going through such diseases. Is it reasonable to suppose that the sight of an animal, or the mere wish for an article of food, should have effects which the much more serious causes do

not



not produce. We know that if a pregnant woman has a limb broken or amputated, she will nevertheless produce an entire child; yet we are gravely told that if she sees such things in another, her child will suffer.

But it is needless to pursue further a question, on which all rational persons well acquainted with the circumstances are already unanimous; to explain that there is not a single fact even approaching to a proof, that the mother's imagination ever had any effect on the form of any child; that none of the numerous monsters resemble, in any essential character, the objects to which they are compared, and most of them, as the brainless and those without hearts, the double fœtuses, those with redundant parts, as the two-headed, &c. correspond to no archetype in nature; and that, when dissection is employed, unusual arrangements of important organs, like nothing else in heaven above or the earth beneath, are found in abundance. This belief in the power of imagination, like the belief in witchcraft, is greater or less, according to the progress of knowledge, which in truth differs greatly in different countries and heads. We know that many enlightened women are fully convinced of its absurdity, while *soi-disant* philosophers are still found to support it.

The production of monsters has been explained mechanically by some physicians: they have supposed that deficient parts are destroyed by external pressure or violence; that superfluous parts are remains of another fœtus becoming adherent to a perfect one, and that compound fœtuses are made of two growing together. This is a perfectly gratuitous hypothesis, and is repugnant to all our knowledge concerning the animal economy. By what facts are we justified in believing, that the ribs of two fœtuses, and the clavicles, can detach themselves from their respective sterna, and become fixed, each to the sternum of the other, as in the skeleton of the double fœtuses: that two perfect hearts, if the chest could be thus metamorphosed, could be united with one auricle only, and with two ventricles, of which each produces a pulmonary artery and an aorta; that a new communicating channel should be formed between the two aortæ, as in the double bodied pig already described. If we could believe all these wonders, it would not be sufficient; for monstrosities occur, when there has been no violence inflicted during pregnancy. We cannot help being surprised that Haller, who shews how inadequate this explanation is to the solution of the phenomena in most of the monstrous births, should admit it in any kinds. Yet he considers it as perfectly applicable to most of the unnatural positions of parts; to some unnatural formations; to the absence and division of organs, and to some cases of preternatural unions. He refers the hare-lip to a want of the cellular substance, that should unite the superior maxillary bones, and conceives that the parting of the bones lacerates the lip. (Lib. ii. cap. 13.) He ascribes the appearances in the acephali to accidents during utero-gestation destroying the brain and its case. The respect due to the name of Haller, a name so dear to all who interest themselves in physiological pursuits, leads us to bestow on these opinions a degree of notice which they would not otherwise gain from us. Let us allow, what is not supported by a shadow of proof, that a force can be applied to the child in utero, capable of causing this extensive destruction; how does it happen that the head should be destroyed in all cases just so far as the orbits? it must either take place suddenly or gradually. The former cannot be the case, for the brain and its membranes could not be annihilated without killing the child; moreover, in the frequency of these cases how does it happen that the head is never found in this bruised condition? If it be the consequence of gradual pres-

sure, how surprising it is that the destruction should always be found precisely at the same point, that no specimens of an earlier or later stage should ever have been met with. How is the presence of the hair at the edge of the integuments, where it does not exist naturally, to be accounted for? Why are females so much oftener the subjects of such accidents than males? Why do not other parts suffer in the same way, since the brain is protected by a bony case at an early period, while the bones in other parts are internal? How does external force destroy the spinous processes of the vertebrae through the integuments in spina bifida?

In order to prove that a brain has existed, and has been destroyed in these cases, Haller observes that it is quite contrary, not only to the wisdom of nature, but to common sense, for arteries, veins, and nerves to be made in a skull, where there is no brain. This is a dangerous argument: is it not equally contradictory that a rectum should be formed without an anus, since life cannot be continued without such an opening? If nature be so wise and careful, why did not she provide against the destruction of the head? And why does she go on working, month after month, to no purpose, in constructing the numerous other monsters, which are incapable of life? Not contented with exercising his mental faculties, on what comes under the operation of his senses, and exploring the instructive scenes of nature, man is ever disposed to enter the regions of imagination, and to give to the beings of his fancy, whom he first clothes with all the attributes of perfection, the designs and actions which accord only with his own shortsightedness and ignorance. He is as positive about what goes on in this unseen region, as if he directed all the operations himself, and can tell you very precisely what does, and what does not harmonise with the wisdom of the Creator, which turns out at last to be the exact representation of his own knowledge or prejudices. Why may not arteries, veins, &c. which usually belong to a brain, be formed without a brain as well as a rectum without an anus, heads without eyes, and all other imperfect monsters? It is enough that the thing happens: whether nature has any design in these formations, or not, we leave undetermined, until we are informed of some data on which a decision may be grounded.

Morgagni has supposed that the acephali may have had hydrocephalus; and that the brain may be destroyed by the water; and this is called an explanation! A learned professor, to be sure, would lose his character, if he had not a reason for every thing that happens: he should say that the child has eaten its own brains, rather than confess his ignorance on the subject.

The reader may refer to Haller, *De Monstris*; in the *Opera Minora*, v. 3.; to Soemmerring, *Abbildung und Beschreibung einiger Mißgeburten*, &c. folio, Mentz, 1791; and to Regnault, *Les Monstres, ou les écarts de la nature; ouvrage qui renferme toutes les monstrosités que la nature produit, soit dans l'espèce humaine, soit parmi les quadrupèdes*, &c. en planches coloriées; folio, Paris, 1775. The two former of these works are replete with references.

For an account of the poor idiots in the Valais and some other mountainous European tracts, and of the swelling of the throat, particularly observed in certain hilly countries, see the articles *CRETIN* and *GOITRE*.

A *MONSTER*, in *Law*, is one that hath not human shape, and yet is born in lawful wedlock; and such may not purchase or retain lands; but a person may be an heir to an ancestor's land, though he have some deformity in any part of his body. (Co. Litt. 7, 8.) If there appears no other heir than such a prodigious birth, the land shall escheat to the lord.



**MONSTERS, Vegetable.** There are also monstrous productions in the vegetable world: such, *e. gr.* are what some botanists call *mules*.

Florists also give the denomination *monsters*, or monstrous flowers, to those flowers which are not only double, but double podded; or when, instead of one flower, there are two or three rising one above another from a single stalk.

**MONSTERAS**, in *Geography*, a town of Sweden, in the province of Smaland; 25 miles N. of Calmar.

**MONSTIER.** See **MOUTIER**.

**MONSTRANS de Droit**, in *Law*, a writ issuing out of chancery, or the exchequer; for restoring a person to lands or tenements that are 'his in right, though on some occasion found in possession of another lately dead.

**MONSTRAVERUNT**, a writ which lies for a tenant who holds by free charter in ancient demesne, upon his being distrained for the payment of any service or imposition contrary to the liberty he does or ought to enjoy.

**MONSTRELET**, **ENGUERRAND DE**, in *Biography*, a chronicler of the fifteenth century, was descended from an ancient family in Cambrai, of which city he died governor in 1453. He left a history, in French, of his own times, commencing with the year 1400, and carried down to 1467, but the last fifteen have been added by another hand. The best edition is that of Paris, in two folio volumes, 1572: its title is "Chronique d'Enguerrand de Montstrelet, gentil-homme, jaedis demeurant à Cambrai en Cambresis." It gives a faithful, but, as might be expected, a prolix narrative of the wars between the houses of Orleans and Burgundy, of the capture of Normandy and Paris by the English, and their expulsion, and of all the memorable events in France and other countries during that period. It occupies the space between the histories of Froissart and Comines, and is valuable on account of the number of original documents which it contains. Moreri.

**MONT, HENRY DU**, a voluminous ecclesiastical composer of music, and maitre de chapelle to the king of France. He published at Paris, in 1652, *Cantica sacra*; and in 1681, motets in four parts, five vols., and other motets for the Chapelle royale in 1686, sixteen vols.

He was born at Liege in 1610, was a great organ player, and the first, says M. Laborde, who introduced the *basse continue*, or thorough-bass, into France. His style is now become extremely dry and uninteresting, and never was equal to that of many Germans and Netherlanders, his contemporaries.

**MONT**, in *Geography*, a town of Persia, in the province of Segestan; 90 miles N.W. of Zareng.

**MONTABAU**, a town of Germany, in the principality of Nassau, in the extensive bailiwick of which silver mines are found; 11 miles E. of Coblenz.

**MONTAFIA**, a town of France, in the department of the Tanaro; 11 miles N.W. of Asti.

**MONTAGNA**, a department of Italy, E. of lake Como, containing about 160,042 inhabitants, who elect 12 deputies; the capital of which is Lecco.

**MONTAGNAC**, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Bergerac; nine miles N. of Bergerac. The place contains 1020, and the canton 10,865 inhabitants, on a territory of 297½ kilometres, in 19 communes.—Also, a town of France, in the department of the Hérault, and chief place of a canton, in the district of Beziers; 21 miles W.S.W. of Montpellier. The place contains 3100, and the canton 9162 inhabitants, on a territory of 212½ kilometres, in 12 communes.

**MONTAGNANA, ANTONIO**, in *Biography*, an Italian opera singer, with a powerful bass voice, and great abilities, who arrived in England during the latter part of Handel's opera regency, as successor to Boschi.

He first performed in Sofames, in the grand air, "Fra l'ombree l'orori." In this air Handel displayed all the power, depth, and mellowness of his voice, and the peculiar accuracy of his intonation in hitting distant intervals. This air will ever be admired, among bass songs, by real judges of composition, and heard with delight by the public, whenever it shall be executed by a singer whose voice and ability shall equal those of Montagnana. He sung for Handel in Faramond and Xerxes, from whom he apostatized, and went over to the opposition, and performed with Farinelli in the operas of Porpora.

**MONTAGNANA, BARTHOLOMEW**, a native of Padua, was a distinguished professor of medicine in the university of that city, in the middle of the fifteenth century; and was succeeded by his son, of the same name, who held a still higher reputation as a scholar, though he was less distinguished as a practical physician. The latter left Padua, and took up his residence in Venice, in the year 1508, where he practised his profession until his death, in 1525. The first Montagnana left a collection of opuscula, which were first printed at Venice in 1497, and afterwards frequently republished, with the title of "Selectionum Operum, &c. Liber unus et alter." And the second published, "Responsa reparatoria, conservandæque sanitati scitu dignissima;" and "De Pestilentia ad Adrianum Pont. Max."

But the family of Montagnana produced several medical and surgical professors for two or three successive generations, the son and two grandsons of the second Bartholomew having taught these sciences, and published each one or two works of little note. A tract of Bartholomew, the son, "De Morbo Gallico," is printed in the Venice collection upon that subject. The grandsons, Marc Anthony and Peter, who were successively professors of surgery at Padua, published, the one a treatise, "De Herpete, Phagedæna, Gangræna, Splacelo, et Cancro," Ven. 1559; and the other two essays "De Urinis," and "De Vulneribus et Ulceribus, eorumque remediis," both in Latin and Italian. Eloy Dict. Hist. de la Med.

**MONTAGNANA**, in *Geography*, a town of Italy, in the Paduan; 18 miles S.W. of Padua. N. lat. 45° 14'. E. long. 11° 31'.—Also, a town of Italy, in the duchy of Modena.

**MONTAGNE, or MONTAIGNE, MICHAEL DE**, in *Biography*, a celebrated essayist, was born in 1533. His early attention to the studies of youth led his father, lord of Montagne, in Perigord, and mayor of Bordeaux, to cultivate his talents with the greatest care. He was exceedingly well grounded in the ancient and some of the modern languages. At the age of thirteen he had completed his course of education at the college of Bordeaux, where he had enjoyed the benefit of the instructions of Muret and Buchanan. He was intended for the legal profession, and followed it some time, but became disgusted with its dry forms, and devoted his talents and time to the study of men and books. After the death of his friend Etienne de la Boetie, who bequeathed to him his library and manuscripts, he published "The Remains" of that friend in prose and verse. In 1569 he printed a translation of "The Natural Theology of Raymond de Sebonde," a learned Spaniard. On the death of his father he acquired possession of the estate and seat of Montagne, and being now at ease, in that retreat, he began to collect materials for his Essays. In the hope of enlarging



larging his sphere of observation on men and manners, he travelled through France, and visited Germany, Switzerland, and Italy. At Rome he was honoured with the privilege of citizenship. In 1581 he was chosen mayor of Bordeaux, an office which he held four years, in the course of which he was delegated by his fellow citizens on some public business to the court. During a residence at Paris he contracted that intimate friendship with Mademoiselle de Gournai, which continued as long as he lived. He was not inclined much to the political squabbles which disturbed France during the reign of Charles IX., but was subject to temporary dangers from the military parties, which at that period seemed to make no difference between friends or foes. He died in 1592, leaving an only daughter. His literary reputation is founded on his "Essays," which were at one time extremely popular, and which are still read with pleasure by a numerous class of persons. They embrace a great variety of topics treated of in a lively and entertaining manner, but without much accuracy or depth. Their style is neither pure nor correct, but simple, bold, lively, and energetic. La Harpe says of him, "As a writer, he has impressed on our language (the French) an energy which it did not before possess, and which has not become antiquated, because it is that of sentiments and ideas. As a philosopher he has painted man as he is: he praises without compliment, and blames without misanthropy." The best editions of Montague's Essays are those of Colte, in three volumes, quarto, 1725, with additions, and a supplemental volume, quarto, 1740, reprinted in six volumes, 12mo.; and that of Brussels, three volumes, 1759. In 1772, Montague's "Travels" were published by M. de Querlon, in one volume quarto, and three volumes 12mo. Moreri.

This modern Democritus, in travelling through Italy and Germany about 12 years before his decease, seems to have attended to the ecclesiastical music of those times and countries, with more interest than we had reason to expect from the general tenour of his life and occupations. In 1580, at Kempton in Bavaria, he says, "the Catholic church of this city, which is Lutheran, is well served; for on Thursday morning, though it was not a holiday, mass was celebrated in the abbey, without the gates, in the same manner as at Notre Dame, in Paris, on Easter-day, with music and organs, at which none but the priesthood were present."

At the church of the Lutherans, Montagne heard one of the ministers preach in German to a very thin congregation, "when he had done, a psalm was sung, in German likewise, to a melody a little different from ours. At each stave the organ, which had been but lately erected, played admirably, making a kind of response to the singing." This is an early instance of the use of interludes in accompanying psalmody on the organ. "As a new-married couple," continues Montagne, "went out of church, the violins and tabors attended them." This circumstance is mentioned to prove, that the violin was then a common instrument in Germany.

At Lanfery, the same author tells us, that "the town-clock, like many others in this country, struck quarters, *et dis-son que celui de Nurembergh joue les minutes.*" This is likewise an early proof of chimes, in Bavaria, whence they are said to be brought into the Low Countries.

It is here that this author gives an account of the cantor or chanter, who directs the singing in Lutheran churches. "Two seats are placed, one for the minister, and one for the preacher, when there is one, and another below for the person who leads off the psalm. After each verse, the congregation waits till he has pitched and begun the next;

then they all sing together, *pele mele*, right or wrong, as loud as ever they can."

MONTAGRIER, in *Geography*, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Ribérac; six miles N.E. of Ribérac. The place contains 1850, and the canton 9175 inhabitants, on a territory of 192½ kilometres, in 13 communes.

MONTAGU, Lady MARY, in *Biography*, the eldest daughter of Evelyn, earl of Kington, afterwards marquis of Dorchester, and then duke of Kingston, and of lady Mary Fielding, daughter of William, earl of Denbigh, was born at Thoresby, in Nottinghamshire, about the year 1690. The first dawn of her genius, led her parents to pay the strictest attention to her education. She acquired the elements of the Greek, Latin, and French languages under the same preceptors as were employed in the education of her brother, lord viscount Newark. After she had made considerable progress in her classical studies, she came under the care of bishop Burnet, who fostered her superior talents with every expression of dignified praise. She gave an extraordinary proof of her erudition, in her twentieth year, by a translation of the *Enchiridion* of Epictetus. She was enabled to acquire so much learning by living a very retired life, spending her time chiefly at Thoresby, and at Acton, near London, in the society of a very few friends. The charms of her person and understanding seem to have been little known to the world till after her marriage, which took place in the year 1712, with Edward Wortley Montagu, a relation of the earl of Halifax, who will be shortly noticed.

For three years after her marriage, and till the return of lord Halifax to the ministry, at the accession of George I., introduced Mr. Wortley (for so he is usually called) to a place in the treasury, they lived privately; but on this change in his circumstances he thought proper to bring his wife to London, and place her in the sphere of the court. Here she attracted that admiration which beauty and elegance, joined to wit and all the charms of conversation, could not fail to inspire. She became familiarly acquainted with Addison, Pope, and other distinguished writers of that period, and was fully equal to maintain her rank among the votaries of polite literature. In 1716, Mr. Wortley obtained the appointment of ambassador to the Porte, and was accompanied to Constantinople by his lady, who took great delight in the opportunity which such a journey offered her of viewing foreign countries and manners. They passed through Germany to Vienna, and thence across Hungary, and the northern provinces of Turkey to Adrianople. Her natural talents, joined to her acquired knowledge, singularly fitted her for taking advantage of her situation, both in the course of travelling, and in her residence as ambassadress. On many occasions she displayed a mind superior to common prejudices and weak fears; but in none so happily as in adopting the Turkish practice of inoculation for the small-pox, then unknown in Christian Europe, for her own son, at Pera, in 1718. This practice, it must be mentioned to her high honour, she was the principal means of introducing into England by the ministrations of Mr. Maitland, the medical attendant on the embassy, and thereby she has rendered herself one of the greatest benefactors of her country. "This merit alone," says one of her biographers, "justly entitles her memory to a high degree of gratitude, not only from this nation, but from all others which have followed the example of Great Britain in taking advantage of so salutary an invention, and even if it should hereafter be superseded



fed by a newer discovery (vaccination), still the medical system of Europe must be considered as indebted to her for rendering familiar the general idea of inoculation." Mr. Wortley returned in 1718, by the way of the Archipelago, to Genoa, and thence to Turin, Lyons, and Paris; so that lady Mary's tour comprised a larger and more varied circuit, than has often been performed by a female traveller; and few have ever been better, or, indeed, half so well able to adapt themselves to foreign manners, or have displayed more firmness of mind in circumstances of difficulty and hazard. On her return she was received at court with the distinction due to her great talents and splendid acquirements, and she renewed her connection with the wits, among whom, Pope was one of the most highly favoured. With this poet she afterwards quarrelled, and this has been regarded as a memorable epoch in her life. If lady Mary were the "Sappho" of that poet's satirical pieces, which few will doubt, though he positively denied the fact, he is chargeable with a grosser insult than could be endured by any woman. The lines particularly referred to are to be found in the imitation of Horace's first satire in the second book. In writing to lord Hervey in vindication of himself, he says, "In regard to the right honourable lady, your friend, I was far from designing a person of her condition by a name so derogatory to her as that of Sappho, a name prostituted to every infamous creature that ever wrote verse or novels. I protest, I never applied that name to her in any verse of mine, public or private, and I firmly believe not in any letter or conversation. Whoever could invent a falsehood to support such an accusation I pity; and whoever can believe such a character to be her's, I pity still more."

Lady Mary retaliated upon the satirist, by joining lord Hervey in a very severe copy of verses, addressed to him. She was thenceforth courted by other wits of the time, and retained her place in the circles of fashion and literature till the year 1739, when she quitted her country and family, and, for a long series of years, established her residence on the continent. Her health was made the pretext of this change of place, but there were probably other reasons for her determination. It is certain she had her husband's consent, from the liberal allowance he made her, and for which she expresses her acknowledgments. It has been thought it was through his injunctions that she left England; this is rendered probable by her returning immediately after his death. But the strain of her letters to him, during this period, betrays neither repentment nor humiliation. Venice, Avignon, and Chamberry, were at different times her residence, but she usually spent her summers at Louverre, in the Venetian territory, famous for its mineral waters. There she occupied an old palace, which she put into habitable condition, amusing herself with her garden, her silk-worms, and the little society which the place afforded. She perfectly accommodated herself to the manners and way of living in that country, and passed her time in tranquillity. On the death of Mr. Wortley in 1761, she complied with the solicitations of her daughter, the countess of Bute, and after an absence of twenty-two years returned to England, where she died in the following year.

Lady M. W. Montagu has obtained a considerable reputation among the literary characters of her own country, as a poetess and epistolary writer. Her chief works in poetry are "Town Eclogues," meant as a kind of parody upon the common pastoral eclogues, and a vehicle of some fashionable satire. As an epistolary writer, this lady's fame stands much higher, and is not surpassed by that of any person of

either sex, whose letters have in this country been given to the public. In proof of what we assert, we refer to the edition in five volumes, published in 1803, to which a biographical memoir is prefixed, from whence the foregoing facts have been chiefly collected.

MONTAGU, EDWARD WORTLEY, only son of lady Mary, and Mr. Wortley Montagu, was born about the year 1714. He was, from a very early period, remarkable for eccentricity of character, and ran away three times from Westminster school. It is said, that in the first of these elopements he exchanged his clothes with a chimney-sweeper, and followed the sooty occupation for some time. He next associated himself with low fishermen, and cried fish through the streets: after this he failed as cabin-boy in a vessel bound to Spain, on his arrival in which country he deserted the ship, and hired himself as a mule-driver; at length he was discovered by the English consul, who sent him back to his friends, and they put him under the care of a private tutor. How long he remained under the instructions of this gentleman we cannot ascertain, but the next time we hear of him is in the West Indies, where he continued some time. He was fond of adventures, and was almost perpetually seeking something new. Of himself he says in a letter to a friend, "I have conversed with the nobles of Germany, and served my apprenticeship in the science of horsemanship at their country-seats. I have been a labourer in the fields of Switzerland and Holland, and have not disdained the humble occupations of postillion and ploughman. I assumed, at Paris, the ridiculous character of a petit-maitre. I was an abbé at Rome. I put on at Hamburgh the Lutheran ruff, and with a triple chin and a formal countenance, I dealt about me the word of God, so as to excite the envy of the clergy." In the more regular and serious part of his life, he was member of the house of commons in two successive parliaments, and was rather an assiduous attendant upon various literary societies. His expensive habits, and consequent necessities, obliged him again to quit his native country, and from this time he became a wanderer upon earth so long as he lived. As an author he published, in 1759, "Reflections on the Rise and Fall of the Ancient Republics," which work contains an elegant and concise summary of the histories of Greece, Rome, and Carthage, with allusions to the state of Great Britain. It acquired for the author a considerable degree of reputation for learning, ingenuity, and taste, but in a pamphlet published almost thirty years afterwards, under the title of "An authentic Detail of Particulars relating to the late Dukes of Kingston," it is affirmed, without any hesitation, that Mr. Montagu had no share in the composition, but that it was wholly written by Mr. Foster, his private tutor, afterwards chaplain to the dukes. In 1760, Mr. Montagu communicated to the Royal Society, in two letters from Turin, "Observations on a supposed antique Bust in the King of Sardinia's Collection." In the Transactions of the Royal Society of London, for the year 1766, there is a letter from Mr. Montagu, giving a curious account of his journey from Cairo to the mountains in the desert of Sinai; and in the following year he transmitted to the society some new observations on Pompey's pillar at Alexandria. "These articles," says his biographer, "point out that abode in the Oriental countries which was the source of his most distinguished singularities." As a professor of religious opinions and doctrines he quitted the Protestant church, in which he had been educated, for that of Rome, which he afterwards abandoned to become a follower of the Arabian prophet. He is said, by Mr. Sharp, in his "Letters from Italy."



Italy," to have appeared with a very long beard and an Armenian head-dress. "His bed was the ground, his food rice, his beverage water, his luxury a pipe and coffee." A more particular account has been given of his mode of living at Venice, by count de Lamberg, in the "Memorial d'un Mondain." "He rises," says the count, "before the sun, says his prayers, and performs his ablutions and *lazzis* according to the Mahometan ritual. An hour after he wakes his pupil, a filthy emigrant of Abyssinia, whom he brought with him from Rosetta. He instructs his dirty negro with all the care and precision of a philosopher, both by precepts and example: he lays before him the strongest proofs of the religion he teaches him, and catechises him in the Arabian language. That he may not omit any particular, in the most rigorous observance of the Mahometan rites, Mr. M. dines at a low table, sitting cross-legged on a sofa, while a Moor, on a cushion still lower, sits gaping with avidity for his master's leavings. It is this negro who supports the white mantle that makes a part of the Turkish garb of his master, who is always preceded, even at noon-day, by two gondoliers, with lighted torches in their hands. The usual place of his residence is Rosetta, where his wife lives, who is the daughter of an inn-keeper at Leghorn, and whom he has forced to embrace the Mahometan religion. During the most intense cold he performs his religious ablutions in cold water, rubbing at the same time his body with sand from the thighs to the feet: his negro also pours fresh water on his head, and combs his beard, and he also pours cold water on the head of the negro. To finish the religious ceremony, he resumes his pipe, turns himself to the east, mutters some prayers, walks afterwards for half an hour, and drinks coffee." With respect to his wife, it may be observed that he married very early in life, a woman of mean birth and in almost the lowest ranks of society, with whom he never cohabited, but to whom he allowed a separate maintenance. "He afterwards assumed all the Mahometan licence with respect to the sex, and in several countries of his residence had a harem of women of various nations and complexions." Dr. Moore, who saw a good deal of Mr. Montagu on the continent, describes him, in his "View of Society, &c. in Italy," as extremely acute, communicative, and entertaining, and blending in his discourse and manners the vivacity of a Frenchman with the gravity of a Turk. Mr. Montagu displayed his singularity of conduct to the last. Upon the death of his lawful wife, being desirous of leaving an heir to his estate, which he was aware would otherwise fall to the Bute family, whom he disliked, he commissioned a friend in England to advertise for a decent young woman already pregnant, who would be willing to marry him. One of the many applicants was fixed on, and he was on the point of returning to England, to form the alliance, when he was seized with an illness which terminated his life in the year 1776. *Gent. Mag. Gen. Biog.*

MONTAGUE, RICHARD, a learned prelate, was born about the year 1577, and having received the elements of good classical education he was sent to pursue his maturer studies at King's college, Cambridge, of which he became a fellow. He very soon obtained preferment in the church, for the duties of which he had been expressly educated. In 1616, he was appointed dean of Hereford, and in 1621 he published a learned answer to Selden's "History of Tythes." He was afterwards engaged in a controversy with the Papists, and wrote a work "Appello Cæsarem," by which he gave offence to the government, and was ordered to appear at the bar of the house of commons in the first parliament of Charles I., on a charge of maintaining Arminian and Popish errors. He was afterwards made bishop of

Chichester in 1628, from whence he was translated to Norwich in 1638. This see he held about three years, when he died. His chief work was an "Ecclesiastical History," in Latin, in which his learning and talents are said to appear to great advantage. *Biog. Brit.*

MONTAGUE, EDWARD, earl of Sandwich, a celebrated English admiral, the only surviving son of sir Sidney Montague, was born in July, 1625. He married, before he was eighteen years old, the daughter of Mr. (afterwards lord) Crewe, and being thought warmly in the interest of the parliament, he received a commission, in 1643, to raise and command a regiment. This colonel Montague performed, and even took the field, in six weeks. He was present at the storming of Lincoln in May, 1644, which was one of the hottest actions in the course of the whole war. He was, likewise, in the battle of Marston-moor, where he so highly distinguished himself, that on the capitulation of the city of York, he was appointed one of the commissioners for settling the articles, though then only in his nineteenth year. He took an active part in the battle of Naseby, and also at the storming of Bristol, in the months of July and September, 1645. After this he entered into the sea-service, and was engaged, in 1656, with admiral Blake in the Mediterranean, and for his success at that time he was exceedingly caressed by the protector, and received the thanks of parliament. On the death of Cromwell, he, like many others who had been zealous in the protector's service, was ready to sacrifice his principles to join the royal party, which was supposed to be the strongest. He was, indeed, in the councils of Charles while he held a commission under the authority of parliament. His conduct became suspected, and he was ordered to attend at the bar of the house to answer for himself. After an examination he was dismissed from his command, which he probably took as a very lenient punishment, knowing, as he must, that he had been guilty of high treason against the existing government. "After such an escape," says Campbell, "he withdrew to his estate in the country, with a design to enjoy, in privacy and peace, the remainder of his life:" his real motives were probably to watch the opportunity of enlisting again under the banners of the king, or the commonwealth, according as the one or the other obtained the sway. He was quickly called from his retirement, and had the honour, as he then thought it, of conveying his majesty to England, who within two days of his landing sent him the ribband and George of the most noble order of the Garter, which were presented to him in his ship, then riding in the Downs. In July, 1660, Charles, grateful for his assistance, created him baron Montague, viscount Hinchinbrooke, and earl of Sandwich, in Kent; he was at the same time sworn of his majesty's most honourable privy-council, made master of the king's wardrobe, admiral of the narrow seas, and lieutenant-admiral to the duke of York, as lord high-admiral of England.

Lord Sandwich has been accused of being an adviser of the measure for giving up Dunkirk, and notwithstanding what Campbell and others have said in his vindication, there seems little doubt that he was privy to the bargain, and offered reasons to bring over those who were against it.

He was in the great battle fought in June, 1665, in which the Dutch lost their admiral, Opdam, and had eighteen of their men of war taken, and fourteen destroyed: the honour of this victory was chiefly due to the earl of Sandwich. The last action in which he was engaged, was on the 28th of May, 1672, which is thus described by Campbell: "The earl of Sandwich, in his fine ship the Royal James, which carried one hundred pieces of cannon, and about 800 men, began the fight, and fell furiously on the squadron of Van



Ghent : this he did, not from a principle of distinguishing himself by an act of heroic valour, for he knew that his character was too well established to need that : his view was to give the rest of the fleet time to form, and in this he carried his point. Captain Brakel, in the Great Holland, a sixty-gun ship, depending on the assistance of his squadron, attacked the Royal James, but was soon disabled, as were several other men of war ; and three fine ships were sunk. By this time most of the admiral's men were killed, and the hull of the Royal James was so pierced with shot, that it was impossible to carry her off. In this distress he might have been relieved by his vice-admiral, sir Joseph Jordan, if that gentleman had not been more solicitous about assisting the duke : when, therefore, he saw him fail by, heedless of the condition in which he lay, he said to those that were about him, " There is nothing left now but to defend the ship to the last man ;" and those who knew him readily understood, that, by the last man, he meant himself. When a fourth fire-ship had grappled him, he begged his captain, sir Richard Haddock, and all his servants, to get into the boat and save themselves, which they did ; yet some of the sailors would not quit the admiral, but staid and endeavoured to put out the fire, which in spite of all their efforts they could not do, and so they perished together ! " Other writers, following the Dutch account, say, that when he saw his ship on fire, he jumped out into the sea and was drowned. This noble lord, it has been reported, occupied his leisure moments in engraving. His Letters and Negotiations have been printed in two volumes. He translated from the Spanish a work on " The Art of Metals."

His lordship's body was found nearly a fortnight afterwards, and being brought home the highest funeral honours were paid to it. He is described by the Dutch historian, Gerard Brandt, as a man equally brave, knowing, and of a most engaging behaviour, one who had rendered his sovereign the greatest services, not only in the field, but in the cabinet, and as an ambassador in foreign courts. His own countryman, bishop Parker, says " he was capable of any business, full of wisdom, a great commander at sea and land, and also learned and eloquent ; affable, liberal, and magnificent." Notwithstanding these encomia, and we might transcribe many others, equally strong and honourable to the character and talents of the earl of Sandwich, still it cannot be denied that he possessed a large portion of worldly wisdom, by means of which he attained to the most distinguished honours ; while others, who had acted in the same cause, but who were steady to their principles, were doomed to the severest sufferings, to the penalties of confiscation of property, and of death. Campbell's Lives of the Admirals. Walpole's Noble and Royal Authors.

MONTAGUE, CHARLES, earl of Halifax, an eminent statesman, and illustrious as a patron of letters, was the fourth son of George Montague, a younger son of the earl of Manchester. He was born in 1661, at Horton, in Northamptonshire, and having laid in a stock of grammatical knowledge in the country, he was at the age of fourteen sent to Westminster school, then under the care of Dr. Busby. He remained in that seminary till he had attained the age of manhood, when he was admitted of Trinity college, Cambridge. Here, besides pursuing the studies of the place, he cultivated a talent for poetry, of which he gave specimens in an ode on the marriage of the princess Anne to prince George of Denmark, and a copy of verses on the death of Charles II. The latter piece attracted the notice of the earl of Dorset, who introduced the author to the wits of the day. He took a part in the parody of Dryden's Hind and Panther, entitled " The Country and

City Mouse," which proved his zeal for the liberties of his country, and which he farther manifested by signing the invitation to the prince of Orange. He was elected a member of the convention which declared the throne vacant on the abdication of king James ; and by the recommendation of the earl of Dorset, a pension of 500*l.* was settled on him by the king, till some promotion should offer. In the house of commons he distinguished himself on many important occasions, particularly in promoting a bill which allowed counsel to persons accused of high treason. In pleading the cause of humanity, he felt embarrassed, and for a short interval was unable to proceed in the argument, upon which he exclaimed " If I, Mr. Speaker, who stand here, a member of this house, innocent and unaccused, am so awed by the view of a wise and illustrious assembly, as to lose the powers of utterance, what must be the condition of a man obliged to plead in a public court for his life."

He was introduced to several places of great honour and trust, as a commissioner of the treasury, a member of the privy-council, and chancellor of the exchequer. In 1695, he undertook the arduous task of recoinage all the silver-money of the kingdom, which had become, at that time, very defective ; this scheme he completed in the course of two years. He also procured the establishment of a general fund, which was the parent of the sinking fund. For these, and for other services, he had a grant of lands in Ireland. In 1698, he was made first commissioner of the treasury, and during his majesty's absence abroad he was appointed one of the lord justices. In 1700, he was called to the house of peers by the title of baron Halifax. Scarcely had he taken his seat in this assembly before he was impeached, by the lower house, of high crimes and misdemeanours. The articles against him referred to the grants which he had obtained from the crown, and to his possessing at the same time offices that were inconsistent with each other, as commissioner and chancellor of the treasury, and auditor of the exchequer. The charges, being heard, were dismissed by the house of lords, and he continued in the king's favour till the death of that sovereign. He was again attacked upon similar grounds after the accession of queen Anne, and though struck out of the list of privy-counsellors, he was protected by the lords. He took a very active part in all the political questions that were agitated at this period : and, in 1706, was appointed one of the commissioners to negotiate the union with Scotland. When the act passed for the naturalization of the Hanover family, and the security of the Protestant succession to the crown, he was appointed to carry it over to the electoral court. He vigorously maintained the struggle of the Whig party to retain a share of power, and after their entire defeat, he was the strenuous opposer of the treaty of Utrecht ; and a steadfast supporter of the honour and interest of the duke of Marlborough. In 1714, he exerted all his powers to ward off the danger that seemed to threaten the Hanover succession, and by his contrivance procured a writ for calling the electoral prince to the house of peers. On this account he was, after the accession of George I., rewarded by an advancement to the earldom of Halifax, with the order of the Garter. His prospects now were extensive and flattering, but death stopped his career, in May, 1715, at the age of 54.

The patronage which lord Halifax afforded to polite literature was repaid by the eulogies of many of the most eminent writers of the time, among these were Addison, Congreve, Steele, and Tickell. Of Addison he was the particular friend and patron. Steele dedicated the fourth volume of the Tatler to his lordship, and mentions him as having " given a new era to wit and learning ; by his



patronage to have produced those arts which before shunned the commerce of the world, into the service of life, and to have been the cause that the man of wit has turned himself to be a man of business." *Biog. Brit.* Johnson's *Lives of the Poets*.

MONTAGUE, ELIZABETH, the daughter of Matthew Robinson, esq. of Horton in Kent, was educated under the direction of the celebrated Dr. Conyers Middleton. In 1742 she married Edward Montague, son of Charles, fifth son of Edward, the first earl of Sandwich. By him she had a son, who died when he was about two years old. She became a widow in early life, and was left with an ample fortune and honourable connections. In 1769 she published "An Essay on the Writings and Genius of Shakspeare," which obtained for the author a considerable degree of reputation. She formed a literary society, which, for some years, was the topic of much conversation, under the name of the "Blue Stocking Club." We have heard many accounts of the origin of the title, but believe it arose from the circumstance of a person excusing himself from going to one of its very early meetings, on account of his being in a deshabille, to which it was replied, "No particular regard to dress is necessary in an assembly devoted to the cultivation of the mind; so little attention, indeed, is paid to the dress of the parties, that a gentleman would not be thought very out of who should appear in blue stockings." This lady was, for many years, noticed for the benevolent peculiarity of giving an annual dinner on May-day to all the little climbing boys, apprentices to the chimney-sweepers of the metropolis. Perhaps her attention to these, too frequently distressed children, led to those humane regulations, which, through the exertions of Mr. Jonas Hanway, were determined on by parliament. Lord Lyttelton was a warm admirer of Mrs. Montague, and was assisted by her in the composition of his "Dialogues of the Dead." She died in 1800. *Gent. Mag.* and *Private Communication*.

MONTAGUE, in *Geography*, a township of Hampshire county, Massachusetts, on the E. bank of Connecticut river; about 18 miles N. of Northampton; incorporated in 1753, and containing 1222 inhabitants.—Also, the northernmost township in New Jersey, situated in Sussex county, on the E. side of the Delaware; 17 miles N. of Newtown.—Also, the largest of the small islands in Prince William's Sound, on the N.W. coast of North America, about 50 miles long and 10 broad. N. lat.  $59^{\circ} 50'$  to  $60^{\circ} 30'$ . W. long.  $147^{\circ}$  to  $148^{\circ}$ .—Also, a township in Upper Canada, partly in the county of Greenville, and partly in Leeds, washed by the river Rideau.—Also, a small island in the Florida stream. N. lat.  $24^{\circ} 42'$ . W. long.  $81^{\circ} 45'$ .—Also, one of the New Hebrides, in the South Pacific ocean. S. lat.  $17^{\circ} 26'$ . E. long.  $168^{\circ} 13'$ .

MONTAJA, a small island on the E. side of the gulf of Bothnia. N. lat.  $65^{\circ} 39'$ . E. long.  $24^{\circ} 44'$ .

MONTAIGRE, a town of France, and principal place of a district, in the department of the Vendée; 16 miles S.S.E. of Nantes. The place contains 1011, and the canton 10,696 inhabitants, on a territory of 265 kilometres, in 10 communes. N. lat.  $47^{\circ}$ . W. long.  $1^{\circ} 14'$ .

MONTAIGU, or SCHERPENHEVEL, a town of France, in the department of the Dyle, raised from a hamlet to a place of importance by the multitude of people who annually resort hither to pay their respect to a miraculous image of the Virgin, placed in a chapel, richly adorned. Justus Lipsius has published an account of the miracles performed by this image; three miles W. of Drift.

MONTAIGUT, a town of France, in the department of the Puy-de-Dôme, and chief place of a canton, in the

district of Riom; 21 miles N.N.W. of Riom. The place contains 1460, and the canton 6875 inhabitants, on a territory of  $197\frac{1}{2}$  kilometres, in 10 communes. N. lat.  $46^{\circ} 12'$ . E. long.  $2^{\circ} 53'$ .—Also, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the district of Agen; 18 miles N.E. of Agen. The place contains 4162, and the canton 8513 inhabitants, on a territory of 165 kilometres, in eight communes. N. lat.  $44^{\circ} 20'$ . E. long.  $1^{\circ} 6'$ .

MONTALEGRE, a town of Portugal, in the province of Tras-los-Montes; 22 miles N.E. of Braga. N. lat.  $41^{\circ} 45'$ . W. long.  $7^{\circ} 38'$ .

MONTALTA, a town of Spain, in the province of Catalonia; seven miles E.N.E. of Urgel.

MONTALTO, a town of the marquise of Ancona, the see of a bishop, suffragan of Fermo; 12 miles S.W. of Fermo. N. lat.  $42^{\circ} 56'$ . E. long.  $13^{\circ} 38'$ .—Also, a town in the duchy of Castro, on the Fiora; 43 miles N.W. of Rome. N. lat.  $43^{\circ} 21'$ . E. long.  $11^{\circ} 33'$ .

MONTALVAN, or MONTALBAN, a town of Spain, in the province of Aragon; 30 miles S.E. of Daroca.—Also, a town of Spain, in the province of Cordova; five miles N.W. of Montilla.

MONTALVAO, a town of Portugal, in Alentejo, on the borders of Spain, near a small river, which passes not far from it into the Tagus; 96 miles N.E. of Lisbon. N. lat.  $39^{\circ} 30'$ . W. long.  $7^{\circ} 12'$ .

MONTALYA, a town of Portugal, in Estramadura; 28 miles N.W. of Beja.

MONTAMBŒUF, a town of France, in the department of the Charente, and chief place of a canton, in the district of Confolens; seven miles N.E. of La Rochefoucault. The place contains 947, and the canton 10,548 inhabitants, on a territory of 185 kilometres, in 16 communes.

MONTANARI, in *Biography*, a great performer on the violin at Rome in the middle of the last century; when a favourite pupil of Tartini, Pasqualina Bini, arriving in that city very young, practised with such assiduity, that in three or four years time he vanquished the most difficult of his master Tartini's compositions, and played them with greater force than the author himself. All the professors at Rome were so astonished by his performance, particularly Montanari, at that time the principal performer on the violin in the capital of the world, that he is supposed to have died of grief and mortification at being so much excelled in talents by the young Bini.

MONTANARI, GEMINIANO, a celebrated Italian natural philosopher and mathematician, was born at Modena in the year 1633. He lost his father while he was very young, but his mother, well aware of the great importance of a good education, had him carefully instructed in the classics, rhetoric, and philosophy, in his native city, and afterwards sent him to Florence, where he studied with much success civil and ecclesiastical jurisprudence. Having completed his studies, he settled in the profession of the law at Vienna, and was previously to this admitted to the degree of doctor at Salzburg. At Vienna he formed an acquaintance with Paul de Buono, a considerable mathematician, which proved the means of diverting his attention from legal pursuits, and of reviving in him a strong inclination for the study of mathematics and natural philosophy. Till now he had been a disciple of the philosophy of Des Cartes, but by conversing with Buono, he adopted the theory of Galileo. In 1657 he accompanied his friend in visiting the mines in Stiria, Bohemia, and Hungary, and attended diligently to those scientific pursuits connected with mineralogy. At length, their



their proceedings awakened the jealousy of the Hungarians, and they were obliged to take refuge in one of the royal palaces, which affected Buono so sensibly that he fell sick and died. Upon this event Montanari came back to Vienna, which he very soon after quitted, and returned to Italy. His necessities now obliged him to practise at the bar of Florence, in order to furnish himself with the means of subsistence; still, however, his philosophical studies occupied the greatest share of his attention. After this he was patronized by duke Alphonso IV. of Modena, and by the marquis Malvasia of Bologna, by whose recommendation he was elected professor of mathematics at the university of Bologna. During 14 years he discharged the duties of his office with unwearied diligence, made a vast number of observations on the celestial bodies, and performed experiments on the nature of different bodies. When the salaries of the professors were reduced, Montanari determined to obtain a settlement elsewhere, and was elected professor of astronomy at Padua. Here he continued to prosecute his observations and experiments, and published various useful and curious works. The senate, likewise, frequently availed themselves of his advice in matters relating to hydraulics, fortification, the art of war, and the management of the mint. He died at Padua in 1687, in the 55th year of his age. He was author of a number of works, of which the titles, in a very long list, is given in the "General Biography:" and to him is attributed the discovery of the method of determining the heights of mountains by means of the barometer, to which he was accidentally led in the course of his travels.

MONTANARO, in *Geography*, a town of the duchy of Piacenza; seven miles S.S.E. of Piacenza.

MONTANCHES, a town of Spain, in Estramadura; 17 miles N. of Merida.

MONTANER, a town of France, in the department of the Lower Pyrenees, and chief place of a canton, in the district of Pau. The place contains 918, and the canton 5849 inhabitants, on a territory of 110 kilometres, in 10 communes.

MONTANERA, a town of Italy, in the department of the Mincio; five miles S. of Mantua.

MONTANINI, in *Biography*. See PERUGINO.

MONTANISTS, in *Ecclesiastical History*, ancient heretics so called from their leader Montanus, who acted the prophet, and had his prophetesses.

Montanus was an obscure man, without any capacity or strength of judgment, who lived in a Phrygian village, called Pepuza, towards the close of the second century. It is generally supposed, that he was born at Ardaba in Mysia, which is either a part of Phrygia, or lay contiguous to it; it is said, that he was but a new convert to Christianity, when he had the vanity to assume the character of a prophet. The rise of Montanism is generally placed by learned moderns about the year 171, agreeably to Eusebius in his "Chronicle," who refers it to the 11th year of Marcus Antoninus. Some, however, as Pearson and Beaufobre, are of opinion, that it appeared in the year 156 or 157, and Barretier refers it to the year 126. Epiphanius, whose chronology is not always accurate, intimates, that Montanus set up his pretensions in the 19th year of Antoninus Pius, or about the year of Christ 156. But the most probable account is that of Eusebius. Although Irenaeus has not expressly mentioned the Montanists, he is supposed to refer to them. They are twice mentioned by Clement of Alexandria; and they were for some time countenanced by a bishop of Rome. They subsisted a good while: for the Cata-Phrygians are expressly mentioned in

Constantine's edicts against heretics. Epiphanius says, they were then in Cappadocia, Galatia, and Phrygia, and numerous in Cilicia, and at Constantinople. Augustine, Sozomen, and Theodoret speak of them as subsisting in their times.

Montanus, no less weak than arrogant, gave out, that he was the *paraclete*, or comforter, which the divine Saviour at his departure from the earth promised to send to his disciples to lead them to all truth. Some have asserted that Montanus pretended to be the Holy Ghost. But others have observed, with greater reason, that he made a distinction between the paraclete, promised by Christ to his apostles, and the holy spirit: understanding by the former a divine teacher, who was to perfect the gospel by the addition of some doctrines omitted by our Saviour, and to cast a full light on others which were expressed in an obscure and imperfect manner: accordingly he pretended to be this divine teacher. Under this character, he added to the laws of the gospel many austere decisions; inculcated the necessity of multiplying fasts; prohibited second marriages as unlawful; maintained that the church should refuse absolution to those, who, after baptism, had fallen into the commission of enormous sins, and that such persons should not be admitted to full communion, though they repented: and condemned all care of the body, especially all nicety in dress, and all female ornaments. He shewed the same aversion to the noblest employments of the mind, that he did to the innocent enjoyments of life; and gave it, as his opinion, that philosophy, arts, and whatever favoured of polite literature, should be mercilessly banished from the Christian church. He looked upon those Christians as guilty of a most heinous transgression, who saved their lives by flight from the persecuting sword, or who ransomed them by money from the hands of their cruel and mercenary judges. He added many other precepts equal to these in severity and rigour: and issued many predictions concerning the disasters that were to happen in the empire, and the approaching destruction of the Roman republic, which rendered him obnoxious to the governing powers. Montanus was, therefore, first by a decree of certain assemblies, and afterwards by the unanimous voice of the whole church, solemnly separated from the body of the faithful. However, he had many patrons and adherents, the principal of whom was Tertullian, and his cause spread abroad through Asia, Africa, and a part of Europe. Eusebius speaks of Alciades and Theodotus as joined with Montanus from the beginning. But the persons most frequently mentioned as his assistants and prophetesses are two women, named Prisca, or Priscilla, and Maximilla. Besides these, there were other women, who were supposed to possess the gift of prophecy. Some of the prophecies of these persons were preserved in writing. Nevertheless, it is observed by several ancient writers, that these people made no boast of any prophecies among them after Montanus and his two women: Maximilla expressly declared that there would be none after her. Although the followers of Montanus held him to be an inspired person, they did not think that his inspiration was equal to that of the apostles, as it did not relate to the great articles of faith, but chiefly to matters of external order and discipline. When they delivered their pretended prophecies, they seemed to be for some time deprived of their reason. As for the resurrection of the body and other great articles of the Christian religion, no doubt seems to have been entertained with regard to their belief of them. Some of them, however, have been charged with not holding the right doctrine concerning the Trinity; and it is probable, says Lardner, that these were in the Sabellian



Sabellian or Unitarian scheme. Tertullian evidently intimates, that they were Millenarians. Several writers of the fourth and fifth centuries inform us, that they had certain mysteries among them, in which they practised both cruelty and lewdness; and two writers, one Isidore of Pelusium, and Cyril of Jerusalem, charge them with magic, killing of infants, lewdness, and idolatry. But reports of this kind have been deemed fictions and calumnies. Eusebius and his authors do not warrant this account of them; and if it had been true, Tertullian would certainly have had no concern with them. We have no reason for doubting, that they received all the scriptures of the Old and New Testament in common with other Christians, and with like respect; and it appears that they had their separate assemblies, in which every part of Christian worship was performed. *Mosh. Eccl. Hist. vol. i. Lardner's Works, vol. ix.*

The Montanists are the same with what were otherwise denominated *Phrygians, Cataphrygians, and Quintilians*, which see.

MONTANUM VERU. See VERU.

MONTARAN ISLANDS, in *Geography*, a cluster of small islands in the East Indian sea. S. lat.  $2^{\circ} 27'$ . E. long.  $108^{\circ} 30'$ .

MONTARGIL, a town of Portugal, in Estramadura; 28 miles S.E. of Santarem.

MONTARGIS, a town of France, and principal place of a district, in the department of the Loiret. The place contains 6394, and the canton 15,135 inhabitants, on a territory of 225 kilometres, in 15 communes. N. lat.  $47^{\circ} 59'$ . E. long.  $2^{\circ} 48'$ .

MONTASORO, a town of Naples, in Principato Citra; nine miles N. of Salerno.

MONTASTRUC, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Toulouse; nine miles N.E. of Toulouse. The place contains 1152, and the canton 6446 inhabitants, on a territory of  $152\frac{1}{2}$  kilometres, in 14 communes.—Also, a town of France, in the department of the Gers; 10 miles N. of Auch.

MONTAUBAN, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Montfort; five miles N.W. of Montfort. The place contains 2781, and the canton 8336 inhabitants, on a territory of 175 kilometres, in eight communes.—Also, a town of France, and principal place of a district, in the department of the Lot, on the Tarn; before the revolution the see of a bishop. Its principal trade consists in woollen stuffs. This town was built in the year 1144 by Alphonso, count of Toulouse. In 1562 the inhabitants became Protestants, who fortified it in such a manner, that Louis XIII. besieged it without success in the year 1621, nor was he able to reduce it till the year 1629, when its fortifications were demolished.

The place contains 21,959 inhabitants: the western part includes 12,851 and its canton 13,257, on a territory of  $87\frac{1}{2}$  kilometres, in three communes; and its eastern part contains 9108 inhabitants, and its canton 10,438, on a territory of  $82\frac{1}{2}$  kilometres, in two communes. N. lat.  $44^{\circ} 0' 55''$ . E. long.  $1^{\circ} 20' 51''$ .—Also, a town of France, in the department of the Drome; 16 miles E. of Nions.

MONTAUK POINT, the eastern extremity of Long island, belonging to the state of New York. A tract called Turtle Hill has been ceded to the United States for the purpose of erecting a light-house upon it.

MONTAUSIER, CHARLES DE SAINTE MAURE, in *Biography*, duke of, a peer of France, born in 1610, was

educated a Protestant, but afterwards conformed to the established religion. He obtained some considerable posts under government. His high character for strict purity of morals, and unshaken loyalty, caused him to be chosen to preside over the education of the dauphin, son of Lewis XIV. and it was his perpetual care to inculcate on his pupil the principles of virtue, and to accustom him to hear the truth. He assiduously kept from him all court flatterers, who were likely to corrupt his heart and injure his moral habits. He once led the dauphin into a cottage, and said to him, "Behold, sir, the miserable roof, under which are lodged the father, the mother, and the children, who incessantly labour to procure the gold with which your palaces are adorned, and who pine with hunger to supply the luxuries of your table." When this worthy man and excellent philosopher had done with his charge, and was on the point of taking his leave, he said to the prince, "Sir, if you are a man of worth, you will love me; if otherwise, you will hate me, and I shall console myself." The duke was so conspicuous for austere morality, and sincerity in his conduct and actions, that Moliere's character of the "Misanthrope" was thought to be modelled after him. Some enemies of the poet insinuated this to the duke, and he went to see the play acted, and on leaving the theatre he exclaimed, "Would to God that I really resembled Moliere's Misanthrope." He was accustomed to speak bold truths even to Lewis XIV. He died at the age of 80, in the year 1690, regretted by all men of real worth. Gen. Biog.

MONTAUTO, in *Geography*, a town of Naples, in Principato Ultra; five miles N. of Benevento.

MONTAW, a town of Prussia, in Pomerelia; eight miles S.W. of Marienburg.

MONTBARD, a town of France, in the department of the Cote d'Or, and chief place of a canton, in the district of Semur; nine miles N. of Semur. The place contains 2118, and the canton 10,875 inhabitants, on a territory of  $287\frac{1}{2}$  kilometres, in 26 communes. N. lat.  $47^{\circ} 36'$ . E. long.  $4^{\circ} 23'$ .

MONTBARREY, a town of France, in the department of the Jura, and chief place of a canton, in the district of Dôle. The place contains 434, and the canton 6727 inhabitants, on a territory of  $187\frac{1}{2}$  kilometres, in 14 communes.

MONTBAZAN, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the district of Tours; 7 miles S. of Tours. The place contains 950, and the canton 13,766 inhabitants, on a territory of  $342\frac{1}{2}$  kilometres, in 15 communes.

MONTBAZENS, a town of France, in the department of the Aveyron, and chief place of a canton, in the district of Villefranche. The place contains 1026, and the canton 9173 inhabitants, on a territory of 195 kilometres, in 13 communes.

MONTBELIARD, PHILIEERT-GUENEAU, in *Biography*, was born in 1720, at Semur, in Auxois. He spent the early part of his youth at Dijon, and afterwards came to Paris, where he made himself known as a man of science. He continued with reputation, the "Collection Academique," a periodical work, which gave a view of every thing interesting contained in the "Memoirs" of the different learned societies in Europe. He was chosen by Buffon to be his associate in his great work on natural history, and the continuation of his ornithology was committed to him. He is described by the great French naturalist, "as of all men, the person whose manner of seeing, judging, and writing was most conformable to his own." When the class of birds was finished, Montbeliard undertook that of insects, relative



tive to which he had already furnished several articles to the *New Encyclopedia*, but his progress was cut short by his death, which took place in 1785.

**MONTBELIARD**, in *Geography*, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Porentruy; 32 miles W. of Bâle. The place contains 3693, and the canton 7665 inhabitants, on a territory of  $102\frac{1}{2}$  kilometres, in 20 communes. Before the revolution, it was the capital of a principality, which, though insulafed in France, was considered as belonging to Germany. Its situation is pleasant, at the foot of a hill, and it is watered by the river Halle, which runs into the Doubs. The adjacent soil is fertile, and the air is salubrious. The inhabitants have a considerable trade in linen, leather, stockings, and cutlery. In its vicinity are vineyards, and a productive iron mine. The principality was about 30 miles long, and 24 in its greatest breadth. The inhabitants were chiefly Protestants, consisting of Swifs, Germans, and French. By the peace of Luneville, the whole was ceded to France. N. lat.  $47^{\circ} 38'$ . E. long.  $6^{\circ} 44'$ .

**MONTBELTRAN**, a town of Spain, in Old Castile; 26 miles S. of Avila.

**MONT-BENOIT**, a town of France, in the department of the Doubs, and chief place of a canton, in the district of Pontarlier; 7 miles N.N.E. of Pontarlier. The place contains 94, and the canton 7059 inhabitants, on a territory of 185 kilometres, in 18 communes.

**MONT-BLANC**. See **BLANC**.

**MONTBOZON**, a town of France, in the department of the Upper Saône, and chief place of a canton, in the district of Vésoul; 10 miles S.S.E. of Vésoul. The place contains 590, and the canton 9698 inhabitants, on a territory of  $257\frac{1}{2}$  kilometres, in 38 communes.

**MONTBRISON**, a city of France, and capital of the department of the Loire, celebrated for its medicinal waters; 31 miles S.S.W. of Lyons. The place contains 4703, and the canton 12,222 inhabitants, on a territory of 295 kilometres, in 21 communes. N. lat.  $45^{\circ} 36'$ . E. long.  $4^{\circ} 9'$ .

**MONTBRON**, a town of France, in the department of the Charente, and chief place of a canton, in the district of Angoulême; 15 miles E. of Angoulême. The place contains 520, and the canton 11,612 inhabitants, on a territory of 305 kilometres, in 14 communes.

**MONTBRUN**, a town of France, in the department of the Drome; 18 miles S.E. of Nions.—Also, a town of France, in the department of the Upper Garonne; 9 miles S. of Rieux.

**MONT-BUET**, a mountain of Switzerland, said to be 10,000 feet above the level of the sea.

**MONT-CAVITA**, a town of the island of Cuba; 20 miles E. of Villa del Principe.

**MONT-CAYO**, a branch of the Pyrenees, which extends to the province of Aragon, in Spain, and one of the highest in that kingdom: it is situated between Aragon, Castile, and Navarre. The storms which collect on this mountain are said to be the terror of the adjacent country, to the extent of 20 miles.

**MONTCENIS**, a town of France, in the department of the Saône and Loire, and chief place of a canton, in the district of Autun; 10 miles S.S.E. of Autun. The place contains 1068, and the canton 9963 inhabitants, on a territory of 290 kilometres, in 12 communes.

**MONTCHU**, a river of Thibet, which runs into the Sanpoo, 12 miles W. of Rimbu.

**MONT-DAUPHIN**, a town of France, in the department of the Higher Alps, seated on a rock, and almost sur-

rounded by the Isère: the residence of a governor and gar-rison; 3 miles N. of Embrun.

**MONT-DE-MARSAN**, a town of France, and principal place of a district, in the department of the Landes; 56 miles S. of Bourdeaux. The place contains 2866, and the canton 11,986 inhabitants, on a territory of 395 kilometres, in 26 communes. N. lat.  $43^{\circ} 53'$ . E. long.  $0^{\circ} 26'$ .

**MONTDIDIER**, a town of France, and principal place of a district, in the department of the Somme; 18 miles S.E. of Amiens. The place contains 4049, and the canton 13,923 inhabitants, on a territory of  $222\frac{1}{2}$  kilometres, in 33 communes. N. lat.  $50^{\circ} 5'$ . E. long.  $2^{\circ} 39'$ .

**MONTDOUBLEAU**, a town of France, in the department of the Loir and Cher, and chief place of a canton, in the district of Vendôme; 30 miles N.N.W. of Blois. The place contains 1749, and the canton 9737 inhabitants, on a territory of  $247\frac{1}{2}$  kilometres, in 14 communes.

**MONTE, GIAMBATISTA DA**, in *Biography*, (or latinized *Montanus*,) a learned and distinguished physician of the 16th century, was descended from the noble family of Monte, in Tuscany, and born at Verona in the year 1498. His tutors in Greek and philosophy were Musuro and Pomponazzo; and on quitting their tuition, he was sent to Padua, with the view of studying jurisprudence, being intended by his father for the profession of the law. His taste, however, was not directed to this study, but led him to that of physic, which he commenced, notwithstanding the displeasure of his father, who even withdrew from him the means of support, in consequence of his disobedience. Nevertheless he persisted in following the bent of his mind, and trusted to his own abilities and industry for subsistence, while he visited several of the principal towns in Italy; especially Naples, Rome, and Venice, where he practised his profession, and distinguished himself by his classical skill. It is probable, indeed, that, in addition to his professional knowledge, his classical talents were put in employment for the means of subsistence; since Ghilini mentions that, at Naples, he explained the poems of Pindar. In the course of his residence at these places, he gained high reputation, and numerous illustrious friends, and at length acquired such ease of circumstances, that he retired to Padua, with the intention of enjoying repose, in 1539. But after residing there about four years, he was called upon to exert his talents as a teacher in that school, being first appointed professor of the practice of medicine, and subsequently of the theory: he was also for some time professor of anatomy in the same university. As his reputation advanced, his emoluments were also augmented, and ultimately surpassed those of any other Italian physician of his time. His disciples were exceedingly numerous, and many of them attained to great eminence. He had been professor eleven years, when his extensive reputation brought him very liberal offers from the emperor, Charles V., Francis I. of France, and the grand duke of Tuscany, and urgent solicitations to settle at their respective courts. But nothing could induce him to quit the chair, which he filled with so much benefit to his pupils, and satisfaction to himself. He was afflicted with calulous complaints, however, under which he at length suffered so severely, that he was compelled to retire to his estate at Terazzo, in the Veronese territory, where he died in May, 1551.

Montanus was held in high estimation by his contemporaries, and his name was deemed of great authority in the Italian schools for a long period. His works, however, which were exceedingly numerous, and mostly published by his disciples, were principally comments upon the ancients, and illustrations



illustrations of their theories; and have therefore ceased to be of importance, since the originals have lost their value. He translated into Latin the works of Aëtius, which he published at the desire of cardinal Ippolito de Medici. He also cultivated poetry, and translated into Latin verse the poem of Musæus: he is said likewise to have made translations of the Argonautics attributed to Orpheus, and of Lucian's *Tragopodagra*. Eloy Dict. Hist. de la Med. Gen. Biog.

MONTE, GUIDUBALDE, *Marquis del*, a Venetian nobleman, an able mathematician, who flourished in the 16th and 17th centuries, but of whom little is known, more than that he spent his whole life in retirement, devoted to abstruse and difficult mathematical studies. In 1600 he published his "Treatise on Perspective," and in 1608 an edition of his "Astronomical Problems" was published by his son, from which it appears that he was then dead. The treatise on perspective, already referred to, is the first in which that science was completely established upon mathematical principles. He also published "A Theory of the Planispheres:" and he drew up "A reformed Calendar." He was author of commentaries upon the two treatises of Archimedes "On Centres of Gravity," and "On the Screw-pump for drawing Water." Gen. Biog.

MONTE, *Il*, in *Geography*, a town of the island of Corsica; 18 miles S. of Bastia.

MONTE-ACUTO, a town of Sardinia; 40 miles E.N.E. of Alghieri.—Also, a town in the duchy of Urbino; 15 miles N.W. of Urbino.

MONTE-AGNONE, a town of Naples, in Principato Citra; 9 miles N.E. of Salerno.

MONTE-ALBANO, a town of Naples, in the province of Otranto; 6 miles W. of Ostuni.—Also, a town of Naples, in Basilicata; 4 miles N.N.E. of Turri.—Also, a town of Sicily, in the valley of Demona; 17 miles S.W. of Melazzo.

MONTE-ALCINO, a town of Etruria, anciently *Mons Alcinio*, the see of a bishop, suffragan of Sienna. The most excellent wine of Italy, called "Muscatello di Monte-Alcino," is procured in its vicinity; 15 miles S.S.E. of Sienna.

MONTE-ALMAYA, a town of Etruria; 9 miles N. of Florence.

MONTE-ALTO, a town of the marquisate of Ancona, the see of a bishop, suffragan of Fermo; 10 miles N. of Ascoli.

MONTE-ALVERINO, a mountain of Etruria, near the source of the Tiber, celebrated for a convent, which is a sanctuary; 14 miles from Florence.

MONTE-APERTO, a town of Naples, in Principato Ultra; 9 miles S. of Benevento.

MONTE-BALDO, a mountain of Italy, between the river Adige and lake Garda, separating the Veronese from the Trentin.

MONTE-BARBARO, a mountain of Naples, on the sea-coast, near Puzzoli.

MONTE BARONE, a town of Naples, in Capitanata; 13 miles S.S.W. of Vieste.

MONTE-BELLO, a town of Naples, in Calabria Ultra; 10 miles S. of Reggio.—Also, a town of Naples, in Abruzzo Citra; 20 miles S.E. of Ranciano.—Also, a town of Naples, in Abruzzo Ultra; 15 miles E.N.E. of Aquila.—Also, a town of Italy, in the Vicentin; 13 miles S.W. of Vicenza.

MONTEBOURG, a town of France, in the department of the Channel, and chief place of a canton, in the district of Valognes; 4 miles S.E. of Valognes. The place

contains 2391, and the canton 10,478 inhabitants, on a territory of 145 kilometres, in 25 communes.

MONTE-BRANDONE, a town of the marquisate of Ancona; 15 miles E.N.E. of Ascoli.

MONTE-BRAULIO, a mountain of the Rhetian Alps, between the Grisons and the Tyrolese; 10 miles N. of Bormio.

MONTE-BRUNO, a town of the Ligurian republic; 15 miles N.E. of Genoa.

MONTECALM, LOUIS JOSEPH DE ST. VERAN, *Marquis de*, in *Biography*, a celebrated general, was born of a noble family at Candiac, in 1712. He entered early into the army, and distinguished himself gallantly in many battles, particularly in that of Placenza, in 1746. In 1756 he became a field-marshal, and was appointed to command the French army in Canada, where he opposed lord Loudun with skill and success. He afterwards defeated Abercrombie, his lordship's successor, but in the famous battle at Quebec, in 1759, he received a mortal wound, at the same time when the valiant Wolfe was slain.

MONTE-CALVO, in *Geography*, a town of the duchy of Urbino; 4 miles N. of Urbino.—Also, a town of Naples, in Principato Ultra; 10 miles E.N.E. of Benevento.

MONTE-CAMPELO, a town of Spain, in Galicia; 7 miles N. of Ferrol.

MONTE-CARLO, a town of Etruria; 24 miles W.N.W. of Florence.

MONTE-CAROTTO, a town of the marquisate of Ancona; 8 miles W. of Jesi.

MONTE-CASINO, a town of Naples, in Lavora, situated on a mountain of the same name, with an abbey in which Benedict is said to have founded his order. This monastery became so famous, that monarchs resigned their crowns in order to end their days here; 13 miles S.S.E. of Sora.

MONTE-CATINO, a town of Etruria; four miles W.S.W. of Volterra.

MONTECATINUS, ANTHONY, in *Biography*, an Italian professor of philosophy, was born in the year 1536, at Ferrara, where he read public lectures, and in process of time was elected the first professor of philosophy. He obtained also the appointment of governor of the city of Reggio, the chief magistrateship of Ferrara, and frequently was entrusted with the whole management of affairs under the duke. He died at Ferrara in 1599, at the age of 63. He is chiefly known as an author by his "Commentary on Aristotle's Politics," to which he added some of Plato's works.

MONTE-CECCE, in *Geography*, a town of Naples, in the county of Molise; 20 miles N.E. of Molise.

MONTECH, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Castel Sarrazin; 7 miles E. of it. The place contains 2610, and the canton 10,240 inhabitants, on a territory of 117½ kilometres, in 10 communes.

MONTECHAL, CHARLES DE, in *Biography*, a learned French prelate, who flourished in the 17th century, was educated at the college of Autun, at Paris, and rose from step to step to the post of principal of that institution. He also rose to the rank of archbishop of Toulouse, and obtained a high reputation for piety, as well as for his acquaintance with history, the civil and canon law, and the Greek and Hebrew languages. He died in 1651. His principal work was entitled "Memoirs of M. de Montchal, archbishop of Toulouse, containing particulars of the life and ministry of Cardinal Richelieu," in two vols. 12mo. Moreri.

MONTE-CHIARO, in *Geography*, a town of Italy, in the department of the Mela; 10 miles S.E. of Brescia.—Also,

E

a town



a town of the duchy of Piacenza; 13 miles S.W. of Piacenza.

**MONTECHIO**, a town of Italy, in the department of the Mela, on the Oglio; 5 miles S.S.W. of Breno.

**MONTECHIO Maggiore**, a town of Italy, in the Vicentin; 11 miles S.W. of Vicenza.

**MONTE-CHRISTI**, a cape, bay, town, and river, on the N. side of the island of St. Domingo. The cape is a high hill, situated in N. lat.  $19^{\circ} 54' 30''$ , and long.  $74^{\circ} 9' 30''$  W. of Paris. The bay is formed by Cape La Grange on one side, and Pointe des Dunes on the other, about 6500 fathoms asunder: this bay is about 1400 fathoms deep, and its winding is nearly four leagues. The town stands at 800 fathoms from the sea-side, and rises in the form of an amphitheatre on the side of the coast. It was founded in 1533, abandoned in 1606, and is now become a poor place. The town and its territory contain about 3000 souls. The land round the town is sandy and barren; and the river contains a great number of crocodiles. To American smugglers this port is well known, and carries on a great commerce, on account of its vicinity to the French plantations.—Also, a chain of mountains, extending parallel to the N. coast of the island of St. Domingo, from the bay of Monte-Christi to the bay of Samana on the E. Two rivers rise and flow in opposite directions, along the southern side of this chain. The river Monte-Christi or Yaque runs in a W. by S. direction, and Yuna river in an E. by S. course to the bay of Samana. Both rise near La Vega, and have numerous branches.—Also, a town of South America, in the audience of Quito, and jurisdiction of Guayaquil, built at first near the Pacific ocean, and called “Manta.” Its commerce was then considerable, by means of vessels passing from Panama to the ports of Peru; but being pillaged by foreign adventurers, who frequented these seas, the town was removed to the foot of a mountain, where it is now situated, and from which it has its name; 110 miles N.W. of Guayaquil. S. lat.  $1^{\circ} 2'$ . W. long.  $80^{\circ} 49' 15''$ .—Also, a small island in the Mediterranean, not far from the coast of Etruria; 8 miles S. of Elba. N. lat.  $42^{\circ} 20'$ . E. long.  $10^{\circ} 20'$ .

**MONTE-CIRCELLO**, a mountainous cape of Italy, near the sea, called by the ancients an island, and rendered famous as the supposed habitation of Circe, the sorceress, who used to transform her lovers into brutes. On the promontory there was once a town called *Circeum*. On the ruins of the town was built a fortress, which served as a place of retreat, and safety for the popes in times of danger. Nothing now remains but a castle called “St. Felice,” erected by pope Celestin II, in the 12th century. An ancient tomb is shewn as the sepulchre of Elpenor, one of the companions of Ulysses, who, in a state of intoxication, fell from the top of a house into the street. N. lat.  $41^{\circ} 17'$ . E. long.  $12^{\circ} 57'$ .

**MONTECLAIRE**, MICHEL DE, in *Biography*, a French musician, who published several useful elementary treatises on his art; but began his career as a serious opera composer in the year 1716, among those who tried their force with little success, after the decease of Lulli.

**MONTE-CORVINO**, in *Geography*, a town of Naples, in Principato Citra, formerly the see of a bishop, but united to Volturara in the year 1433; nine miles E. of Salerno.

**MONTECUCULI**, Count SEBASTIAN, in *Biography*, an Italian gentleman, who was introduced at the French court, and became cup-bearer to the dauphin Francis, son of Francis I. He was accused of having poisoned the young prince of Valence, and being put to the torture, confessed that he was hired to do the deed by the partisans of

Charles V. The friends of the emperor, however, full refuted the abominable charge, and threw it back upon Catherine de Medicis, wife of Henry II. brother to the dauphin. This circumstance occurred in 1536.

**MONTECUCULI**, RAYMOND DE, prince of the holy Roman empire, and a celebrated general in the service of the house of Austria, was born in 1608, at Montecuccoli, the seat of his family, in the Modenese. Having received a liberal education, he took arms at an early age, under his uncle Ernest Montecuculi, general of artillery in the imperial service. The wars in Flanders were his first scene of action, and in that school he acquired the skill and experience which raised him into notice. The first contest in which he distinguished himself was in the year 1644, when at the head of 2000 men he surprised 10,000 Swedes, whom he compelled to abandon their baggage and artillery. He was himself afterwards defeated and made prisoner by the Swedish general Bannier, and was detained in captivity two years. This time, which to most young men would have been lost to themselves and the world, our youthful soldier employed in literary and scientific pursuits. On returning to his profession, he defeated the Swedes, in Bohemia. After the peace of Westphalia, he travelled into different countries, and was sent once in a diplomatic character to Stockholm. He was very honourably received by queen Christina, who afterwards admitted him to her correspondence, and imparted to him her secret intention of abdicating the throne. In 1657 he was appointed field-marshal, and sent to the relief of John Casimir, king of Poland, who was attacked by the forces of Sweden, and the prince of Transylvania. After defeating the latter, he took Cracow from the Swedes, and gained several splendid actions, which produced a peace. He next served against the Turks, and drove them out of Transylvania, for which he was made president of the Imperial council. In 1673 he was sent against the French, to oppose the celebrated Turenne; these great masters in the art of war exhausted every stratagem in their science; but while the game was in a state of balance, it was brought to a conclusion by the death of Turenne, from a cannon-ball, as he was reconnoitring with a design to attack. He afterwards acted with great courage and skill against the prince of Conde. After this he refused to contend with generals of inferior reputation. He died in 1681. He was attached to literature, and left behind him a work entitled “Memoire sur l'Arte della Guerra.”

**MONTE-DEL-BUCHAR**, in *Geography*, a cape on the W. coast of North America. N. lat.  $35^{\circ} 19'$ . E. long.  $239^{\circ} 29'$ .

**MONTE-DELL-CASALE**, a town of Naples, in Basilicata; 12 miles N.W. of Turfi.

**MONTE-FAGARIA**, a mountain of Sicily, in the valley of Noto; seven miles W.N.W. of Castro Giovanni.

**MONTE-FALCO**, a town of the duchy of Spoleto, on a mountain near the Clitumno; 12 miles W.N.W. of Spoleto.

**MONTE-FALCONE**, a town of Naples, in the county of Molise; 18 miles N.E. of Molise.—Also, a town of Istria; 16 miles W. of Trieste.

**MONTE-FEGATESE**, a town of the republic of Lucca; 12 miles N. of Lucca.

**MONTE-FELICE**, a town of the duchy of Urbino; 12 miles N.W. of Urbino. N. lat.  $43^{\circ} 56'$ . E. long.  $22^{\circ} 16'$ .

**MONTE-FIASCONE**, a town of Italy, the see of a bishop, formerly belonging to the patrimony of the pope; and supposed by some to be the ancient “Falerium,” or “Falerii,”



"Falerii," the capital of the Falisci; but others, in deference to the authority of Strabo, place the ancient Falerium on a hill, which is now occupied by Citta Castellana, on the Via Flaminia, between Rome and Otricoli. During the second triumvirate, Falerium was made a Roman colony, and called "Colonia Janonia Etruscorum;" and Macrobius observes, that the statue of Janus Quadrifrons, or four-faced Janus, was first brought from that city to Rome. Monte-Fiascone is now a very small town, though a bishop's see, with a seminary tolerably well endowed; the large dome or cupola on its cathedral is seen at a distance; but its streets are narrow and badly planned. It is principally distinguished by its situation in the midst of hills, and by its excellent wine, particularly its Muscadel, which is the produce of the Patrimonio di San Pietro, and very much esteemed in Italy; 10 miles N.W. of Viterbo. N. lat.  $42^{\circ} 33'$ . E. long.  $11^{\circ} 56'$ .

MONTE-FILATRANO, a town of the marquisate of Ancona; 15 miles S.W. of Tolentino.

MONTE-FORCOLI, a town of Etruria; 28 miles W.S.W. of Florence.

MONTE-FORTE, a town of Naples, in Principato Ultra; 18 miles S.S.W. of Benevento.

MONTE-FORTINO, a town of the marquisate of Ancona; 12 miles N.W. of Ascoli.

MONTE-FRIO, a town of Spain, in the province of Grenada; 12 miles N.N.E. of Loja.

MONTE-FUSCO, a town of Naples, in Principato Ultra; seven miles S.S.E. of Benevento.

MONTE-GALLIZO, a town of Naples, in Principato Ultra; 18 miles S.S.E. of Benevento.

MONTEGAS, or MONTIGO, a town of Portugal, in the province of Beira; 16 miles S.W. of Guardia.

MONTEGIO, a town of the Ligurian republic; 12 miles N. of Genoa.

MONTE-GIOISO, a town of Naples, in Calabria Ultra; 10 miles N. of Girace.

MONTE-GIOVE, a mountain of the island of Candy, anciently "Mount Ida;" six miles S. of Candy.

MONTEGO, a river of the island of Jamaica, which runs into Montego bay; which is a bay on the N. coast of the island. N. lat.  $18^{\circ} 30'$ . W. long.  $77^{\circ} 52'$ .

MONTEGO Bay, a flourishing and opulent sea-port town of the county of Cornwall, in the island of Jamaica, situated on the N. side of the island; it consists of 225 houses, 33 of which are capital stores or warehouses, and contains about 600 white inhabitants. The number of top-fail vessels which clear annually at this port, is stated by Mr. Edwards to be about 150, of which 70 are capital ships; but this account includes part of those which enter at Kingston. Montego bay was made a free port in 1758. In 1795, it was almost destroyed by an earthquake; the damage amounting to 200,000*l*. N. lat.  $18^{\circ} 31'$ . W. long.  $78^{\circ} 20'$ .

MONTEGO Key, a small island in the bay of Honduras, near the coast of Mexico. N. lat.  $17^{\circ} 50'$ . W. long.  $88^{\circ} 48'$ .

MONTE-GRANARO, a town of Naples, in the Capitanata; 16 miles W. of Manfredonia.—Also, a town of the marquisate of Ancona; 22 miles S. of Ancona.

MONTE-GROSSO, a town of France, in the department of Golo, (island of Corsica,) and chief place of a canton, in the district of Calvi. The canton contains 4829 inhabitants.

MONTE-GROSSO, a town of Naples, in the province of Bari; six miles N.E. of Minorbino.

MONTEJAN, a town of France, in the department of the Maine and Loire; 10 miles S.W. of Angers.

MONTE-IGNOSO, a town of the republic of Lucca; 20 miles W. of Lucca.

MONTEJICAR, a town of Spain, in the province of Grenada; 12 miles N.W. of Guadix.

MONTEJO, a town of France, in the department of Marengo; 12 miles E.S.E. of Chivasso.

MONTEITH, a district of Scotland, in the S. part of the county of Perth.

MONTE/LIE', a fort of Burgundy wine.

MONTELMART, in *Geography*, a town of France, and principal place of a district, in the department of the Drôme, situated on the Robiou; in which are some manufactures of wool, silk, and leather. The place contains 6320, and the canton 10,598 inhabitants, on a territory of 212½ kilometres, in 11 communes. The people of this town, it is said, were the first in France who embraced the doctrines of the reformation. N. lat.  $44^{\circ} 33'$ . E. long.  $4^{\circ} 49'$ .

MONTELLA, a town of Naples, in Principato Citra; 12 miles W. of Conza.

MONTELLA, or *Montilla*, a light, white Spanish wine from Andalusia.

MONTEMOR o Novo, in *Geography*, a town of Portugal, in the province of Alentejo, on the Canna; containing four parishes, and above 4000 inhabitants; 50 miles E. of Lisbon. N. lat.  $38^{\circ} 36'$ . W. long.  $8^{\circ}$ .

MONTEMOR o Velho, a town of Portugal, in the province of Beira, on the Mondego, containing six parish churches, a convent, several hospitals, and above 1900 inhabitants; the residence of a military commander, with 24 companies of regular troops, quartered in the town and vicinity; 90 miles N. of Lisbon. N. lat.  $40^{\circ} 7'$ . W. long.  $8^{\circ} 33'$ .

MONTENDRE, a town of France, in the department of the Lower Charente, and chief place of a canton, in the district of Jonzac; seven miles W. of Montlieu. The place contains 852, and the canton 7417 inhabitants, on a territory of 28½ kilometres, in 19 communes.

MONTENERO, a town of France, in the department of the Stura; five miles N.N.E. of Coni.

MONTENSES. See AGONISTICI, CAMPITÆ, and DONATISTS.

MONTE-NUOVO, the *New Mountain*, near Puzzoli, in the Neapolitan territory. It was raised in the night, in September 1538, by the agency of a subterraneous volcano, which ejected such an immense quantity of earth, stones, and ashes, that in the course of 48 hours it attained the height of 2100 feet.

MONTEPULCIANO, a very fine red Tuscan wine from Stiano, in the district of Scarperie. It is exported in flasks.

MONTER, Fr., in *Music*, to rise, ascend in the scale by a series of notes from the grave to the acute.

MONTEREAU-FAULT-YONNE, in *Geography*, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Fontainebleau, at the junction of the Seine and Yonne; 12 miles N.E. of Nemours. The place contains 3435, and the canton 8399 inhabitants, on a territory of 167½ kilometres, in 14 communes.

MONTEREY, a town of Spain, in Galicia; 18 miles S.E. of Orense.

MONTEREY, or *Monterrey*, a Spanish settlement or presidio on the coast of California, founded, according to La Peroufe, on the third of June 1770, which by exact Spanish observations in 1791, is in N. lat.  $36^{\circ} 35' 45''$ , and long.  $115^{\circ} 47' 30''$  W. of Cadiz. We shall here observe, that with the Spaniards, "presidio" is a general name for all forts, both in Africa and America, placed in the middle



## MONTEREY.

of a country of infidels, and implying, that there are no other inhabitants besides the garrison which resides within the citadel. The principal Spanish garrison is that of Monterey, and the lieutenant-governor, who resides at Monterey, is governor of both the Californias. The soil of the adjacent district is tolerably fertile and productive; for La Perouse observed maize, barley, and peas; and by his account, the climate is mild though foggy. But according to the Spanish writers, whose account is more likely to be just than that of Perouse, who visited this coast at a particular season, the climate of California seems to be divided between excessive cold and torrents of rain, while water-spouts and hurricanes are not unfrequent, and thick fogs serve to diversify these vicissitudes. The soil seems also to display a great variety of barrenness. The chief product is derived from the fur of foxes and other animals. From the account of the state of California in 1794, given by Estalla, we learn, that the missionaries have planted olives, figs, pomegranates, vines, and peaches, all of which yield an abundant produce. The most common plant is the "Mescal," which covers the mountains and vallies, and, like the "Maguey" of the south, supplies the savages with food, drink, and clothing. Although the land be generally barren, fish are abundant, and some of the shells are exquisitely beautiful. From Monterey, and even from the Red river, to Mendocino, the country is covered with immense forests of pines and other trees. The Spaniards have begun to carry on a fur-trade with China; in this respect following the example of the Russians, who for this purpose had availed themselves of their settlements on the north-western coast of America; whilst their settlements in California furnished them with an abundant supply of skins, chiefly of the sea-otter, as it is called by the Spanish writers, the fur being black, and equal to the finest beaver. The manner of catching the sea-otters is so peculiar to the Indians, that the English, Dutch, and Spaniards, have not been able to imitate their skill. In small canoes, constructed of wood, or a kind of flag, and capable of holding only one person, they venture out to sea; and provided with a long rope furnished with two hooks, the boatman advances towards the otter, the females being surrounded with their young, whom they teach to swim. On the approach of the canoe, the female plunges under water, and the Indian fixes the hooks in the foot and leg of one of the young. He then retires and gives out rope, which he occasionally pulls, and then giving pain to the young animal, it roars so as to bring the dam to its assistance, who, in endeavouring to extricate the young one, is often herself entangled by the hooks; upon which the hunter arrives and kills her by a sharp blow on the head.

The mining station of St. Ann, near the mission of All-Saints, at 24°, the silver of which is remarkably pure, has been abandoned on account of the cruelty of the savages, who massacred the workmen. However, in some parts of the country, the natives are more mild and docile than in others. The women are entrusted with the care of providing food, and other means of subsistence, whilst the men, like other savages in general, walk about like idle vagabonds; and this business is often very laborious. They are obliged to submit to this fatiguing drudgery, as death might probably be the consequence of any objection or demur. Hence it happens, that murders are very frequent among them, and they are committed on the slightest occasions. Their food is very simple, consisting of herbs, wild fruits, a kind of rabbits, venison, with vipers, snakes, rats, lizards, and the like. In fishing the Californians are very skilful; and they are also very dextrous in the chase. The Californians

are easily instigated either to good or evil; they will often learn the principles of the Christian faith in a fortnight, and as soon forget them; sometimes crowding to the missions, and presently abandoning them. They receive favours with coolness, and treat their benefactors with neglect. Although they appear bold, they are in reality cowardly, and soon yield under the apprehension of danger or chastisement. They have scarcely any government, or disposition to associate, or to fix in any place; they only unite in the dance, the feast, and their petty wars. Their huts or hovels are generally two or three together, about 14 yards square, having roofs formed of branches, and covered with a little earth, and very low, so that they are always full of smoke. They indulge their appetites without restraint; and they are all naked except the women, who wear a small mantle of the fibres of a plant, and a skin of some animal over the bosom. The latter is also worn by the chiefs. The head-dress of the ladies is a little helmet of rushes, while the men wear feathers. They use necklaces made of little shells, and some of the men wear caps made of clay. Their complexion is generally dark, though some of the women are tolerably fair. They paint themselves with various colours; some cut off a piece of the ear, some pierce the under lip, others the nostrils, and wear as ornaments mice, lizards, shells, &c.; and it is evidently their design in painting, to render themselves terrible to their enemies. The furniture of their hovels consists in a little net to keep seeds, some wild tobacco, with a pipe of clay, quivers for arrows, two pieces of wood to light a fire, in rubbing which against each other, so as to produce it, they are very dextrous; a bow and arrows, a club to kill rabbits, and some cords and hooks for fishing: A person who possesses these articles is reckoned rich, but there are many who have nothing. When they wish to move, the man bears the bow and arrows, and the woman all the rest. The missionaries have discovered one district in which polygamy is not permitted, but regarded as unhappy, and tending to a speedy death. But, in general, a man may keep, under the title of cooks, as many women as he can maintain. Although adultery be common, it is an object of chastisement, and the husband may repudiate or kill his wife. The mother will sometimes kill or abandon her infant, without being subject to any account. Many of the tribes seem to have no knowledge of religion or of a first cause; they have neither temples, nor idols, nor altars, nor do they worship the sun or moon. Some, however, have confused notions both of a creator, and of a kind of providence. They have a sort of magicians, called "Quamas," who supply the want of priests, and are regarded as oracles. These magicians pretend to cure diseases by ridiculous ceremonies and gestures, and they greatly impede the progress of Christianity, because they justly regard it as destructive to their profession. These magicians distinguish themselves at the festivals, which are merely assemblies of men and women to gratify all their appetites. They have also wrestling matches, in which the victor becomes the favourite of the women, while the vanquished feel so mortified that they sometimes put themselves to death. The magicians display their influence on occasion of funerals, in a variety of ridiculous ceremonies. The natives of this country, whatever difference there may be in the statements by various authors, as to the salubrity of the climate, are generally temperate, and enjoy good health; but the number of savages, particularly among the Pericues in the southern part of the peninsula, that have fallen victims to the venereal disease, is very great, so that this particular tribe is almost extinguished.

The bay of Monterey, formed by New-Year's day (Ano nuevo) point to the northward, and Cypress or Fir (Pinos)



(Pinos) point to the southward, is eight leagues across at its entrance in that direction, and nearly six in depth to the eastward, where the lands are low and sandy. The sea rolls in to the very foot of the eminences of sand, with which the coast is skirted, with a noise which may be heard at about the distance of a league. The lands to the northward and southward of this bay are elevated and covered with trees. Ships intending to put in here must keep the S. shore aboard, and after doubling Fir point, which stretches out to the northward, they will see the "presidio," and may drop anchor in ten fathoms water within, and behind this point, which shelters them from the sea-breezes. The Spanish ships that stay for a long time at Monterrey, approach within one or two lengths of a cable to the shore, in six fathoms water, where they moor to an anchor buried in the sand of the beach: they are thus sheltered from the S. winds, which are sometimes very strong, though not dangerous, as they blow off shore. At full and change of the moon it is high water at half past one, and the tide rises seven feet. The whales in this bay are very numerous, and, as Perouse says, very familiar. They were continually blowing at the distance of half a pistol's shot, and occasioned a very disagreeable smell in the air.

The coasts of Monterrey bay are covered by almost eternal fogs, which render it difficult of approach, though in other respects there scarcely exists a bay more easily entered. The sea is covered with pelicans, which never go above five or six leagues from land; and, therefore, navigators who perceive them during a fog, will be certain that they are within that distance. These birds are very common on the whole coast of California, and are called by the Spaniards "Alcatrazes." M. Monneron, who visited this harbour in December, 1786, observes that the land about it, though dry, seems adapted for advantageous cultivation. European grains grow here both fine and abundant, and the butchers' meat is of the best quality. It is therefore certain, he adds, considering the commodiousness of the harbour, that if this settlement should ever flourish, a better port for one or more vessels could not be found in any part of the world. For further particulars, we refer to the articles *NEW ALBION*, and *CALIFORNIA*.

**MONTEROSO**, a town of Sicily, in the valley of Noto; 20 miles N.N.W. of Noto. N. lat. 36° 38'. E. long. 14° 55'.

**MONTESA**, a small town and ruined castle of Spain, in Valencia; nine miles S.W. of St. Felipe. The town is built in the form of an amphitheatre, on a mountain which stands forward detached from the chain. This was the seat of the military order of that name. Most of the monks perished there by an earthquake, which happened on the 23d of May, 1748; the rock on which the castle was built being split open, so that parts of it fell off. A great part of the castle still remains of a long rectangular form, the walls of which are flanked with towers and pierced with loop-holes.

**MONTESA**, *Order of*. See *St. GEORGE of Alfama*.

**MONTESQUIEU**, CHARLES DE SECONDAT, *Baron de*, in *Biography*, an eminent magistrate and writer, descended from a distinguished family in Guienne, was born in 1689. At a very early period in life he manifested a propensity to deep and solid thinking, and in his twentieth year he began to make collections for his most celebrated work. He was appointed to the office of president a mortier in the parliament of Bourdeaux in 1716, and in 1722 he was deputed by that body to make remonstrances on account of a new impost, when he employed his eloquence with so much force as to obtain its suppression. He had already published his "Persian Letters," which give a satirical representation of

the manners and sentiments of the country, under the assumed character of a foreigner. These letters serve as a vehicle of free sentiments concerning politics and religion, which the author was one of the first to render popular in France. They gave him a degree of literary reputation which induced him to become a candidate for a place in the French academy; but the liberties which he had taken with the church and state were represented in so serious a light to the minister, the cardinal Fleury, that he had reason to fear exclusion, through the interference of authority. He, however, surmounted this obstacle, and was admitted into the academy in the year 1728. He now resolved to devote his time and talents to the instruction of his fellow creatures as a writer: with this view he thought it was necessary to study national characters upon the spot, and accordingly set out on his travels. He visited Germany, Hungary, Italy, Switzerland, and Holland, and finished with a residence of nearly two years in England. Of this country, he said "it was the best to think in;" and here he was honoured with the regards and attention of queen Caroline, and of the most distinguished literary characters of the day. He paid a marked attention to the English constitution, of which, upon the most profound reflection, he thought most highly. On his return to his native country he put the last hand to his work, entitled "Sur la Cause de la Grandeur et de la Decadence des Romains," which was published in the year 1734. This excellent performance is celebrated for the energy of its style, the force of its descriptions, and the depth of the author's remarks. His love of liberty is the animating spirit of the whole. In 1748 he published, in two volumes quarto, his "Esprit des Loix." On this he had spent very many years of his life; its principles are founded on the radical diversities of mankind, owing to climate and other causes, and it discusses at large the nature of different forms of government, from which laws emanate, and to which they ought to be adapted. Voltaire, in speaking of this work, which is far from faultless, says, "if it does not always instruct the reader, it never fails to make him think." And M. de la Harpe, in comparing Montesquieu and Rousseau, says that the system of the latter was a work of mere imagination; but the "Esprit des Loix" was produced by long labour and meditation, and it seems as if one should, like a novel, be read for amusement, and the other for information and improvement. Montesquieu's lively and ingenious expressions, in which is displayed the imagination of Montagne, have particularly contributed to the great reputation of the "Esprit des Loix." The same things said even by a more learned man would not have been read. Few works are to be met with in which there are more profound ideas, more bold thoughts, or more matter for instruction. It has a claim to be ranked among the original productions which adorned the age of Lewis XIV., and which has no model in antiquity. For several parts of his work the author drew upon himself certain censures, and among his critics was M. Dupin, a farmer-general, who wrote an answer to it; but after a few copies of the critique had been distributed, Montesquieu made his complaint to madame Pompadour, who sent for the writer, and told him she took the "Spirit of the Laws," and its author, under her protection: in consequence of this, Dupin was obliged to submit, and the whole edition of his answer was consigned to the flames. This was not to the credit of Montesquieu, who should have learnt a different lesson from the country in which he had been excited to thought and reflection.

He died of a pulmonary complaint in February, 1755, in the sixty-sixth year of his age. His last hours were disturbed.



turbed by the Jesuits, who were anxious to get from him something like a retraction of his sentiments concerning religion. His private character is represented as having been highly amiable and estimable. Though habitually frugal, he was capable of great generosity, and an instance of his beneficence in giving his purse to a young boatman at Marseilles, and secretly consigning a sum of money to a banker to redeem the youth's father from slavery in Africa, has been the subject of a pathetic drama. In temper he was mild, cheerful, and equal, free from ambition, simple, and unaffected. After his death was published a collection of his works in three volumes quarto, in which were some pieces that had not before appeared. Of these the principal was "Le Temple de Guide," a kind of prose poem. This was at first read with great avidity, but was soon considered as an effusion unworthy of the author. The president had a son, John Baptista de Secondat, counsellor of the parliament of Bourdeaux, who died in that city in 1796, at the age of seventy-nine. He was author of many works; particularly of "Observations de Physique et d'Histoire Naturelle sur les Eaux Minerales de Pyrenes," 1750; "Considerations sur la Commerce et la Navigation de la Grande Bretagne," 1740; "Considerations sur la Marine Militaire de France," 1756. He resided a considerable time in London, and was elected a member of the Royal Society.

MONTESQUIEU, in *Geography*, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Muret; four miles N.W. of Villefranche. The place contains 2802, and the canton 9401 inhabitants, on a territory of 227½ kilometres, in 15 communes.

MONTESQUIOU, a town of France, in the department of the Gers, and chief place of a canton, in the district of Mirande; four miles N.N.W. of Mirande. The place contains 1874, and the canton 9547 inhabitants, on a territory of 272½ kilometres, in 19 communes.

MONTET, a town of France, in the department of the Allier, and chief place of a canton, in the district of Moulins; six miles N.W. of Montmerault. The place contains 450, and the canton 10,544 inhabitants, on a territory of 327½ kilometres, in 14 communes.

MONTEVERDE, CLAUDIO, in *Biography*, a native of Cremona, was one of the most eminent composers of the period now under consideration. He first distinguished himself as a performer on the tenor viol; and being taken into the service of the duke of Mantua, applied himself to the study of composition under the direction of Marcantonio Ingegneri, of Cremona, maestro di capella of that court, and a considerable composer for the church. Soon after he went to Venice, where the republic appointed him maestro of St. Mark's church, a place which has been always filled by professors of great abilities. Here, in 1582, he published madrigals for three, four, and five voices, in the style of the times; but his courage increasing with experience, in his subsequent productions he dared to violate many rules of counterpoint, which, having been long established, were held sacred by orthodox professors. He had, therefore, many opponents, who treated him as an ignorant corrupter of the art. Among these, the principal was Gio. Maria Artusi, of Bologna, who, in the first part of his tract "On the Imperfection of Modern Music," published in 1600, as well as in the second, which appeared in 1603, inveighed with great asperity against Monteverde. Musicians entered the lists on both sides, and the war became general. Monteverde defended himself in prefaces and letters prefixed to his works; but his best defence was the revolution he brought about in counterpoint; for his licences,

pleasing the public ear, were soon adopted not only by dilettante, but professors.

As the innovations of Monteverde form a memorable epoch in the history of the art, it seems necessary to acquaint the musical reader in what they consisted. The laws of harmony, like those of tragedy, comedy, and epic poetry, when once established, check invention, and frequently impel men of real genius to become imitators. Unluckily musicians had not such perfect models before them, as antiquity has furnished to poets in the dramatic works of Sophocles, Euripides, and Terence, or the epic poems of Homer and Virgil. In the infancy of musical composition, men saw but a little way into the latent resources of harmonic combinations; rules were formed upon few and narrow principles, derived from monotonous and insipid compositions, when timidity was feeling its way in the dark, and every deviation from the practice of the first contrapuntists was thought licentious. However, men were too great friends to the pleasure of the ear, not to encourage such happy licences as those with which Monteverde was charged; and since that time, every fortunate breach of an old rule seems to be regarded as the establishment of a new; by which means, the code is so enlarged, that we may now almost pronounce every thing to be allowable in a musical composition, that does not offend cultivated ears.

Monteverde was the first who used double discords, such as the  $\frac{2}{3}$ ,  $\frac{3}{4}$ , and  $\frac{1}{2}$ , as well as the flat fifth, and the seventh unprepared; and as he was possessed of more genius and science than the prince of Venosa, his innovations were not merely praised, and then avoided, but abused, and adopted by other composers.

But it was not only by the use of these discords that he improved music, for by quitting ecclesiastical modulation in his secular productions, he determined the key of each movement, smoothed and phrased the melody, and made all his parts sing in a more natural and flowing manner than had been done by any of his predecessors. In the first set of Monteverde's madrigals the composition is not only correct and simple, but so dry and fanciless, as to threaten no attempts at such new harmonies and effects, as would bring about a revolution in the art. And it seems to have been by design, and in his dramatic experiments at the expression of words, that he ventured to violate ancient rules, and militate against prejudice and pedantry: for neither his church music, nor the two first books of his madrigals, contain any licences that would offend or surprise orthodox ears, even in the fifteenth century. But in his fifth and last book of madrigals, almost every species of discord and modulation is hazarded, for the use of which the boldest composers of modern times have been often thought licentious.

Something so free, facile, and similar to music of much later times appears through all the trammels of fugue and complication, in the melody, harmony, and modulation of his latter madrigals, that we are sorry not to be able to allow room in our plates for a specimen, which, however, curious inquirers into the progress of the art, may see in Burney's History of Music, vol. iii. p. 237, &c.

Monteverde may be regarded as a man who formed an era in the history of his art: he freed himself from many severe and narrow rules which impeded all experiment, and consequently improvement. His new and bold use of discords opened a career, which, but for him, a great number of celebrated composers would never have been heard of.

He had acquired great reputation in 1620, and was admitted that same year into the academy at Bologna with great solemnity. His madrigals were printed at Venice from 1582 to 1651. Another collection of his pieces appeared



at Venice in 1640, for one, two, three, four, five, six, seven, and eight voices.

He was one of the first cultivators of recitative, and set the following operas: "Proserpina Rapita," 1630; "Ariadne," 1640; "Adonis," with the title of a musical tragedy, 1642; and "L'Incoronazione di Poppea," all for Venice. With respect to these operas, the learned Gio. Bat. Doni says: "Claudio Monteverde, at present maestro di capella to the republic of Venice, has received great applause at the performance of his Ariadne; he afterwards published the principal part of this production, which is the Lamentation of Ariadne, and perhaps the most beautiful composition of the kind which our times have produced."

**MONTEVIDEO**, in *Geography*, a bay and town of La Plata, or Paraguay, in South America, situated on the N. side of La Plata river: it lies E. of Buenos Ayres, and has its name from a mountain which overlooks it, about 20 leagues from Cape Santa Maria, at the mouth of the Plata. S. lat.  $34^{\circ} 30'$ .

**MONTEY**, a town of Switzerland, and seat of a bailiff, in the Valais; nine miles N. of Martigny.

**MONTEYO**, a town of Portugal, in the province of Beira; 15 miles S.W. of Guardia.

**MONTEZIA**, a town of the island of Cuba; 25 miles S.S.E. of Havana.

**MONTEZUMA**, in *Biography*. See MEXICO.

**MONTFAUCON**, BERNARD DE, a celebrated antiquary and philologist, was born in 1655, at the castle of Soulague, in Languedoc. In early life he entered into the military service, and served in two or three campaigns. By the death of his parents, and some other circumstances, he was so much impressed with a distaste of the world, that he formed the resolution of adopting a monastic life. In 1675, he entered among the Benedictines of St. Maur, and devoted himself to the pursuits of literature. In conjunction with two of his friends, he published "*Analecta Græca, Gr. et Lat. cum notis.*" In 1690, he published a small tract, entitled "*La Verité de l'Histoire de Judith,*" in which he gave some elucidations of the history of the Median and Assyrian empires. After this he was occupied a few years in preparing a new edition of the works of St. Athanasius, which appeared in three volumes folio, dedicated to pope Innocent XII. This work was published in 1698, and was preceded by a new life of that father, and by several learned dissertations. In the same year he undertook a journey to Italy, for the purpose of consulting libraries and examining manuscripts relative to the inquiries in which he was engaged. Having been from home about three years he returned to Paris, where, in 1702, he published an account of the observations made in this tour, under the title of "*Diarium Italicum, sive Monumentorum veterum, Bibliothecarum, Museorum, &c.*" During his residence at Rome, he printed a defence of the edition of St. Augustin, published by the fathers of his order, against various attacks which it had undergone. In 1706, he published "*A Collection of Ancient Greek Ecclesiastical Writers,*" in two volumes, with translations, notes, and dissertations: but one of his most learned and important works appeared in 1708, with the title of "*Palæographia Græca, sive de Ortu et Progressu Literarum Græcarum, et de variis omnium Seculorum Scripturæ Græcæ generibus, &c.*" This work has effected, with respect to the ascertainment of the age of Greek MSS., that which the work of Mabillon, "*De Re Diplomatica,*" has done with regard to the Latin. In 1719, he was nominated a supernumerary honorary member of the Academy of Inscriptions and Belles Lettres, and in the same year he published, in Latin and French, his celebrated

work, "*L'Antiquité expliquée et représentée en Figures,*" Paris, ten volumes folio. A supplement to it appeared in 1724, in five volumes. This stupendous collection of the monuments of antiquity contains 1200 plates, comprising between 30 and 40,000 figures. Between the years 1729 and 1733, he published "*Monumens de la Monarchie Française,*" five volumes folio, with a great number of figures. And in 1739, he gave the public his concluding work, entitled "*Bibliotheca Bibliothecarum Manuscriptorum nova,*" in two volumes folio. He died at the abbey of St. Germain des Près in 1741, at the age of eighty-seven, having, it is said, preserved his faculties so entire, that nearly to the termination of his career he employed eight hours a day in study. He was author of many other works besides those that have been already noticed. He was not less estimable for his piety, candour, and goodness, than for the extent of his erudition. Moreri.

Among the voluminous works of this learned and indefatigable writer, there is in his "*Tresor d'Antiquitez sacrées,*" a dissertation on the music of the ancients, and particularly of the Hebrews, which merits some consideration as a musical article.

The antiquity of the sacred writings is now so remote as to throw into the regions of conjecture almost every thing concerning the Hebrews that is not in the bible. After an eulogy almost enthusiastic on the music of the ancients in general, and of the Hebrews in particular, up to Tubal Cain, this pious Benedictine proceeds to describe their music and musical instruments, with as much firmness as if he had seen and heard them but yesterday.

He allows, however, that there was no musical establishment, even in the celebration of religious rites, till the time of the royal psalmist, David, when he constituted it a part of priestly study. So that they had it all to learn.

The author then describes the musical establishments of David and Solomon for the service of religion; which were indeed the most numerous and splendid upon record. When David first regulated these establishments, it appears that not only the select band of singing men and singing women, but 4000 Levites were appointed to praise the Lord with instruments, and the number of those that were *instructed* and *cunning* in song, is said to be 288.

But all this sudden cultivation of music does not reflect any great honour on the Hebrews as inventors of the art: for the learned writer says that they had their music from the Chaldeans and the Egyptians, and never pretended to the honour of invention. The rabbins enumerate 34 different musical instruments which they seem to have had in use, and which, perhaps, surpasses the Grecian list. But after examining the names of these instruments, he found it necessary to retrench 14 of them at once; as there did not appear among them any term which indisputably signified an instrument of music; so that the number is reduced to 20, of which he has given engravings; but every one of these is demonstrably Grecian, and copied from ancient sculpture, known to be Greek. The reverend father, indeed, does not seem deeply read in musical history, or he would never have asserted that several of these ancient instruments were played with a *bow* instead of a *plectrum*. But it has not been proved by any of the most curious and perspicuous antiquaries, that the use of the bow was ever known to the ancients, nor can it be demonstrated of higher antiquity than 500 years.

**MONTFAUCON**, in *Geography*, a town of France, in the department of the Nièvre, and chief place of a canton, in the district of Montmedy; 10 miles N. of Clermont. The place contains 1024, and the canton 9194 inhabitants, on a territory of



of 190 kilometres, in 18 communes.—Also, a town of France, in the Upper Loire, and chief place of a canton, in the district of Yssengeaux; nine miles S.E. of Monistrol. The place contains 864, and the canton 9172 inhabitants, on a territory of 187½ kilometres, in 7 communes.—Also, a town of France, in the department of the Maine and Loire, and chief place of a canton, in the district of Beaupréau; nine miles W. of Cholet. The place contains 477, and the canton 10,053 inhabitants, on a territory of 267½ kilometres, in 12 communes.

**MONTFERRAND**, a town of France, in the department of the Puy-de-Dôme, and chief place of a canton, in the district of Clermont, one mile N. of Clermont. The place contains 5522, and the canton 13,334 inhabitants, on a territory of 72½ kilometres, in six communes.

**MONTFERRAND**, a fine sort of red Bourdeaux wine, the produce of Clermont-Ferrand, in Auvergne. It is principally sent to Holland, Germany, and the north of Europe.

**MONTFERRAT**, *Duchy of*, in *Geography*, lately a principality of Italy, bounded on the W. and N. by Piedmont, on the E. by the duchy of Milan, and on the S. by the republic of Genoa; lying in N. lat. 45°, and in E. long. 8° 20', and being upwards of 60 miles from N. to S., and from 30 to 38 from W. to E. Consisting of mountains and fruitful vallies, it abounds in corn and muscadine wine; and contains about 200 market-towns, villages, and feats. It was erected into a duchy by the emperor Maximilian II., but was entirely ceded to Sardinia, A.D. 1708. It is divided into Upper and Lower; the former containing the provinces of Alba and Acqui, and the latter those of Casal and Trino. Casal is the capital of the duchy. This duchy is now united to France, and included in the departments of the Tanaro and Marengo.

**MONTFERRAT Wines**, a common kind of Italian wines in the Piedmontese territory.

**MONTFLANQUIN**, in *Geography*, a town of France, in the department of the Lot and Garonne, and chief place of a canton, in the district of Villeneuve d'Agen; 19 miles N. of it. The place contains 5173, and the canton 12,237 inhabitants, on a territory of 225 kilometres, in 12 communes. N. lat. 44° 32'. E. long. 0° 52'.

**MONTFORT**, **SIMON DE**, in *Biography*, a famous commander in the 13th century, was descended from a noble family, the lords of Montfort, a town in the district of Paris. He was remarkable for the magnitude and strength of his body, and distinguished himself on various occasions in combats against the Germans and English, and in an expedition beyond sea. In 1209 he conducted the croisade against the Albigenes, on which occasion he rendered himself infamous by the cruelties which he perpetrated; of these too many instances are given on the page of history; we shall record but one, which of itself is sufficient to hand his name down to posterity with execration. After the capture of Lavaur, he caused the lady of the place to be thrown into a well, her brother to be hanged, fourscore gentlemen to be massacred in cold blood, and 400 heretics to be burnt, while the *kind-hearted* clergy, of that barbarous period, were singing a hymn to the Holy Ghost. Montfort gained a victory, in 1213, over Peter, king of Arragon, but was himself killed, at the siege of Toulouse, in 1218, by a stone hurled from a machine, of peculiar construction, by the hand of a woman. He obtained the reputation of one of the greatest captains of the time, and a champion of the Catholic faith. Moreri. Univer. Hist.

**MONTFORT**, **SIMON DE**, earl of Leicester, son of the preceding, settled in England in 1236, and obtaining the fa-

vour of the king, Henry III., he was created earl of Leicester, and was permitted to marry the countess dowager of Pembroke, sister to the monarch. He was afterwards appointed lieutenant-general of Gascony, but his government having excited great discontents among the people, he was recalled, tried, and acquitted of the charges exhibited against him. The king, however, was satisfied of his guilt, and called him a traitor to his face, an affront which the earl returned by giving him the lie direct: and though an outward reconciliation took place, yet they never afterwards appear to have borne good-will for each other. The extortions and tyranny of Henry having excited discontents at home, Montfort began to entertain ambitious projects, by displaying a zeal for reform, and by fomenting public disaffection. He even went so far as to call a secret meeting of the most considerable barons, and concerted with them a plan for reforming the government. In 1258, Henry having convoked a parliament for the purpose of obtaining supplies for the conquest of Sicily, the crown of which the pope had conferred on his son, the barons entered the hall completely armed, and boldly remonstrated with him upon his errors. The king now found himself, as it were, a prisoner in the hands of his subjects, and the power, which was, probably, at first, necessary for security against the sovereign's usurpations, was soon abused and made subservient to the private interest of the barons, of whom Leicester was the chief mover: He soon obtained various successes, and at length got possession of the king's person. He now made use of the superiority which his valour had won, without any regard to the dictates of moderation, and at length contrived to have the whole authority committed to himself, the bishop of Chichester, and the earl of Gloucester. He employed various methods of extortion to fill his coffers, of which some were so oppressive, that he drew upon himself the hatred of the people, and a junction was expected to be formed between the royalists and the discontented barons. To oppose this he summoned a parliament in January 1265, composed not only of the two knights sent from every shire, but of representatives from the boroughs, for the first time on record. The dread of Leicester's unbounded power detached from him the earl of Gloucester, who retired to his estate and garrisoned his several castles. Leicester proclaimed him and his adherents traitors: a civil war commenced, in which Leicester was slain, with one of his sons; another of his sons was taken prisoner, and the ruin and expulsion of his whole family were the result of this defeat. Hume. Henry.

**MONTFORT**, in *Geography*, a town of France, and principal place of a district, in the department of the Ille and Vilaine; 30 miles S of St. Malo. The place contains 1115, and the canton 13,426 inhabitants, on a territory of 177½ kilometres, in 11 communes. N. lat 48° 8'. E. long. 1° 52'.—Also, a town and ruinous castle, where the ancient counts of Feldkirch resided, and from which they took their title, forming, as it has been said, a separate county; 12 miles S. of Brezentz.—Also, a town of Holland, situated on the river Iffel. It is a well-built town, and fortified, but not strong; 23 miles S. of Amsterdam.—Also, a town of France, in the department of the Landes, and chief place of a canton, in the district of Dax; nine miles E. of Dax. The place contains 1410, and the canton 11,385 inhabitants, on a territory of 225 kilometres, in 22 communes.—Also, a town of France, in the department of the Sarthe, and chief place of a canton, in the district of Le Mans; nine miles E.N.E. of Le Mans. The place contains 793, and the canton 12,606 inhabitants, on a territory of 247½ kilometres, in 18 communes.

**MONTFORT**—



**MONTFORT-sur-Risle**, a town of France, in the department of the Eure, and chief place of a canton, in the district of Pontaudemer; seven miles S.E. of it. The place contains 542, and the canton 9275 inhabitants, on a territory of 132½ kilometres, in 15 communes.

**MONTGISCARD**, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of Villefranche; 7 miles N.W. of it. The place contains 1100, and the canton 9789 inhabitants, on a territory of 16½ kilometres, in 20 communes.

**MONTGOLFIER**, in *Biography*. See **AEROSTATION**.

**MONTGOMERY**, **GABRIEL DE**, *Count of*, a celebrated French nobleman, was born of an ancient Scotch family. In 1559 he had the misfortune to kill Henry II. by accidentally wounding him in the eye as they were tilting at a tournament given by that monarch, on occasion of the marriage between his daughter Elizabeth and the king of Spain. After this unfortunate disaster, Montgomery went to Italy and other countries, till the civil wars recalled him to France, where he attached himself to the Protestants, and became one of their principal chiefs. He defended Rouen in 1562, against the royal army, and when the city was taken by assault he escaped to Havre. In 1569 he raised the siege of Bearne, in Navarre, then closely pressed by the Catholics; after which he followed the besiegers to Orthez, which he took by assault. Montgomery was at Paris at the time of the massacre of the Protestants in 1572, but escaped, though closely pursued. With his family he retired to Jersey, and from thence to England. In 1573 he returned to Normandy, where he was joined by some of the Protestant nobility at St. Lo, at which place he was besieged by Matignon, lieutenant-general in Lower Normandy. But Montgomery escaped from thence, and went to Dumfront, whither he was followed by Matignon, who after a long combat made him prisoner. This gallant nobleman was beheaded at Paris in 1574. *Moreri*.

**MONTGOMERY**, in *Geography*, a county of America, in the upper district of Georgia, on the N.E. side of Alatomaha river, containing 3180 inhabitants, and divided into 12 towns.—Also, a county of New York, first called Tryon, but changed into Montgomery in 1784, by an act of the legislature. It contains 24,483 inhabitants. Its chief town is Johnston.—Also, a township in Ulster county, New York, W. of New Windsor and Newburgh.—Also, a township in Franklin county, Vermont; watered by Trout river, and containing 36 inhabitants.—Also, a township in Hampshire county, Massachusetts; 15 miles from Boston; incorporated in 1780, and containing 560 inhabitants.—Also, a county in Pennsylvania, 13 miles long, and 17 broad; N.W. of Philadelphia. It is divided into 18 townships, and contains 24,150 inhabitants. Its chief town is Norritown.—Also, a township in the last mentioned county.—Also, a township in Franklin county.—Also, a county in Salisbury district, North Carolina, containing 7677 inhabitants, including 1373 slaves.—Also, a county of Virginia, S. of Botetourt county; about 100 miles long, and 44 broad. It has some lead mines. It contains 8076 free inhabitants, and 968 slaves. Its chief town is Christianburg.—Also, a county of Maryland, on Patowmac river; containing 15,058 inhabitants, including 6288 slaves.—Also, a county in Tennessee state and Mero district. This and Robertson county are the territory formerly called Tennessee county, the name of which ceases since the State has taken that name. It contains 2899 inhabitants.—Also, a county of Kentucky, containing 6999 inhabitants, of whom 749 are slaves.

VOL. XXIV.

**MONTGOMERY**, a borough, market town, and parish, situated in the Cwmwd of Ystradd Marchell, Cantref of Yst-lyc, (now called the Lower Division of the hundred of Montgomery), Montgomeryshire, North Wales. This town was originally denominated Tre-Faldwyn, i. e. Baldwin's Town, from Baldwin, a lieutenant of the Marches, who lived during the reign of William the Conqueror; and who, at the command of his sovereign, erected a castle here in order to further his views against the Welsh. That people, however, seem not to have permitted him to retain it long; for we find it very soon after besieged and taken by Roger Montgomery, earl of Arundel and Shrewsbury, who re fortified it, and gave it the appellation of Montgomery, in honour of himself. The Welsh again possessed themselves both of the town and castle in the following year; and having demolished the latter, retired on the approach of king William Rufus, who rebuilt it in greater strength than before. On the retreat of the king's forces, however, the new fortress was likewise besieged by a large army under the command of Gryffydd-a-Conan, who committed most dreadful depredations in the neighbouring country. This conduct so much incensed the king, that he marched once more into Wales, vowing to destroy the Welsh power; but great as his means were, he found them insufficient for the object, and was soon compelled to return to England with the loss of several thousand of his bravest troops. Flushed with this success, the siege of the castle was renewed with redoubled ardour by the Welsh, who succeeded in making themselves masters of it by storm, after a most heroic resistance; and again levelled it with the ground. The earl of Shrewsbury rebuilt it in the succeeding reign, but in less than a century afterwards, this erection also shared the fate of the former. Henry III. next renewed it, and gave the custody of it to Hubert-de-Burgh, during whose governorship it continued almost constantly in a state of siege, and was at last taken and destroyed by Llewelyn-ap-Jorweth, who inhumanly put the whole garrison to the sword. By whom it was again re-edified subsequent to this period is uncertain; but that it did not long remain in its ruined condition is clear from the circumstance of a conference being held here in 1268, when peace was concluded between England and Wales, through the mediation of Otoboni, pope Clement's legate in Britain. After this, no event of material consequence immediately connected with the history of this place happened till the era of the civil wars in the reign of Charles I., when lord Herbert, the then proprietor of the castle, garrisoned it for the king; but was so intimidated by the approach of the parliamentary army, that he wrote to their general, sir Thomas Middleton, declaring his readiness to join the republican standard; which he accordingly did. The advance of the royal forces, under lord Byron, however, soon after rendered it prudent for sir Thomas to retire to Oswestry, leaving only a very small garrison in the castle; but having been there reinforced, he again marched back to its relief, when a most desperate engagement ensued, in which the royalists, though much superior in numbers, were completely defeated. The castle subsequently met with the same fate as most of those which had, at any time, declared for the king, being dismantled by order of the house of commons, and never again repaired. It stood on the extremity of an eminence, to the north of the town; and apparently impending over it. From the small remains, now in existence, it is impossible to determine either its shape or extent; but it is said to have been of great size, and magnificently built. That it was a place of strength and importance in former times cannot be doubted, if any credit is to be given to the records of



history. Indeed it still retains convincing proof of its strength ; one side of the ridge on which it was seated being extremely lofty, and almost perpendicular in acclivity ; while the others, which are less steep, have the defence of four large fosses cut out of the solid rock, over which draw-bridges have been thrown.

The town of Montgomery is pleasantly situated on an eminence of inferior height to that on which the ruins of the castle appear. It is clean and neatly built, and still bears evident marks of its having been anciently surrounded by a wall. In Leland's time great part of this wall was standing ; and that writer mentions four gates then in ruins, called "Kedewen gate, Chirbury gate, Arthur's gate, and Kerry gate," and also some remains "of broken towers," of which the white tower was "the most notable:" only a few traces of these are now left. This town is governed by a high steward, two bailiffs, and twelve capital burgesses, or common councilmen, and was erected into a free borough in the reign of Henry III. It sends one representative to parliament, who is elected by the burgesses, and returned by the bailiffs. Llanydloes, Welsh-Pool, and Llanfyllin formerly possessed a share in this privilege, but they have been totally debarred from it since the year 1728, on the authority of a parliamentary decision. The guild-hall here is a very handsome edifice, at which all the public business of the town is transacted ; and near the site of the castle a large county gaol has been lately erected. The church is built in the form of a cross, and contains several monuments of the Herbert family. That in honour of Richard Herbert, esq. father of the celebrated lord Herbert of Cherburg, is particularly distinguished for the remains of former magnificence, which are yet apparent. A market is held on Saturdays : here are held the quarter sessions, and the petty sessions for the lower division of the hundred. According to the parliamentary returns of 1801, the population of the parish amounted only to 992 persons, viz. 493 males, and 499 females.

On the same side of the town with the castle, but at a short distance, is a stupendous encampment, which probably has been a British post. The situation is on the summit of a lofty hill, sufficiently defended on one side by its abrupt ascent ; and on the more accessible parts by deep fosses which run directly across it. The approach was further defended by four shorter fosses, having two entrances communicating with the main work. In the vale between this hill and that on which the castle stood, are the remains of a small fortification, which Mr. Evans conjectures to have been the site of the fortrefs built by Sir Baldwin, because "partaking of the Norman manner in design and shape." Chirbury priory stands about two miles from the town on the road to Shrewsbury. This edifice was founded in the reign of king John for monks of the order of St. Bennet ; and at the general dissolution was granted to Edward Hopton and his wife Elizabeth ; but the rectory and parsonage were both soon afterwards bestowed on the grammar-school at Shrewsbury. The mountain, Mynydd, or Cefn-Digoll, about five miles to the north-east, on the confines of Shropshire, is distinguished in the military history of Wales as the scene of a desperate engagement, in which Madoc, prince of that country, was defeated and slain. Pennant's Tour in Wales. Beauties of England and Wales, vol. xvii.

**MONTGOMERYSHIRE**, one of the counties of North Wales, is bounded on the E. and N.E. by the county of Salop in England ; on the S.E. by Radnorshire ; on the W. and S.W. by Merionethshire and Cardiganshire ; and on the N. by Denbighshire. It extends, according to the most

accurate surveys, 35 miles in length, from the farthest point of Llangurig, on the borders of South Wales, to Pityll-Rhaiadr, a noted cataract in the Berwyn hills ; and in breadth, from the town of Montgomery to that of Machynlleth, 30 miles. The superficial area is variously stated ; Templeman making it to comprise 444,800 acres, while by other computation it is fixed as high as 560,000 ; and again, in a very recent survey, at 491,600. Of this extent only 60,000 acres are under cultivation, and 18,000 laid down in pasturage ; the remainder of the county is either in a waste condition or is appropriated to woodlands.

The first inhabitants of this district, of whom mention is made in history, were a portion of the Ordovices, or Ordovices, whose territories extended at one time over the whole six counties of North Wales, with the exception of a small part of Flintshire, which belonged to the Carnabii. This people, naturally brave, and defended by the lofty hills and almost impassable ravines, with which their country abounds, contrived, notwithstanding their deficiency in military skill, to baffle, for a period of two centuries, all the efforts of Roman discipline and courage to subdue them. Julius Agricola, the celebrated general of Domitian, however, at last effected, by his consummate and indefatigable conduct, what his predecessors had in vain attempted ; and not only compelled this county, but the most remote corner of Wales, to acknowledge and submit to the Roman yoke. But though conquered, their ancient valour and love of country still continued to animate them, so that no sooner were the mighty conquerors of Europe forced to abandon their distant provinces and concentrate their troops for the defence of Italy, than the natives again asserted their independence. At this period, however, their country became divided into two separate kingdoms, or principalities ; of which Powisland was, for many years, the most powerful and extensive ; and included Montgomeryshire. During the heptarchy many desperate battles were fought, either within this county, or on its borders ; especially in the reign of Offa, king of Mercia, who, having routed the Powysians in several actions, compelled them to abandon all their possessions in Shropshire ; and in order the more effectually to restrain their incursions, built the celebrated "dyke," which is still visible at the eastern boundary of the county. Though thus restrained, however, the Powysian monarchs, who now fixed their residence at Mathral, in the vale of Meivod, still continued to be objects of terror to their Mercian neighbours. The dyke of Offa was frequently a scene of the most dreadful carnage. At Buttington, the generals of the great Alfred completely destroyed a large body of Danes, who, having penetrated through Mercia, had posted themselves here upon the approach of the Saxon army. By this time the integrity of the kingdom of Powisland had been again invaded, by its separation into two smaller principalities, of which Montgomeryshire alone formed that distinguished by the name of Powis-Wenwynwyn. This district, subsequent to the Norman conquest, shared the fate of all the border counties, being compelled to submit to the feudal domination of the lords marchers, after a long and desperate struggle to maintain its liberty. It still continued, however, to be distinguished by its ancient name, till the division of Wales into counties, in the reign of Henry VIII., when it received the appellation of Montgomeryshire, from the town of Montgomery, which forms the subject of the preceding article.

The greater proportion of this county assumes a mountainous characteristic. This is particularly the case with the midland, western, and south-western parts, which are extremely bleak and unfavourable to cultivation. A range of mountains,



## MONTGOMERYSHIRE.

mountains, commonly distinguished by the title of "the back-bone of Montgomeryshire and Merionethshire," commences in the south-western district, and running nearly through the whole shire, in a curvilinear direction, enters the county of Merioneth near Aran Fowddwy. The Freiddin, or Bridden hills, and the Long mountain, rear their lofty heads on the eastern side of the county, and form a natural boundary throughout their extent, between it and Shropshire. The Biga mountains are seen on the north, stretching themselves along the northern side of the valley of the Severn, till they reach a collateral ridge of Plinlimmon. Besides these there are numerous inferior ranges, usually separated by long narrow vallies and a few isolated hills, which rise to a very considerable height, like artificial mounts, in the centre of a level tract of country. The substrata of these hills vary, but not so much as in the adjacent counties. Limestone rarely enters into their composition, except in the vicinity of Llanymech and Porthwaun, at both of which places a considerable quantity of lime is wrought, chiefly for the purposes of manure. Slate strata, on the other hand, are very abundant, and indeed constitute the principal portion of all the mountains in the county, which are not pre-eminently lofty. Many quarries have been opened in different districts for the manufacture of this material, but the principal ones are confined to the hills around Llangynnog, where the best slates, perhaps in England, are procured. From the elevated situation of these quarries, the conveyance of the slates from thence to the plain below is a task of considerable difficulty and hazard. The method in use here to accomplish that object is not a little remarkable, and to an observer unaccustomed to the sight, must appear fraught with extreme danger. The slates are placed on a small sledge, adapted to the work, which is fastened to the shoulders of a man who has the care of delivering the cargo at the base of the mountain, by means of a rope, of which he lays fast hold with both hands, and then turning his face towards the load, he begins to move, gradually receding backwards till he reaches the bottom. Apparently dangerous, however, as this operation is, long experience has rendered it so familiar to the workmen in general, that accidents are very uncommon; and to many of them it is equally easy as conducting a common wheel-barrow on level ground. The other mineral productions of this county are coal, silver, lead and copper. The coal mines are only found, in any considerable quantity, at Coedwae, on the borders of Salop. Silver is most plentiful at Esgair-hir, where, as well as at Graig-y-Mwyn, near Pistyll-Rhaiadr, Dolydan west from Llanbryn-Mair, and Llanydloes, lead mines have been opened. The only copper mine is situated in the vicinity of Esgair-hir, on the confines of Cardiganshire.

Montgomeryshire is abundantly supplied with rivers; indeed it may justly be said that more streams take their rise in this county than in any other of similar extent in Great Britain. Of these rivers the principal are the Severn, the Wye, the Vyrnwy, and the Tanat. The Severn, rising on the side of Plinlimmon hill, runs in a north-easterly direction through a very considerable portion of the county, and during its course receives the waters of several auxiliary streams. The Wye, which likewise has its source from the same ridge, taking a south-east direction, is joined by the Bedw rivulet at Llangerrig; whence flowing more to the south it soon enters Radnorshire. The Vyrnwy rises near Bwlch-y-Groes, and after a very changeable course, during which it is joined by the Tanat, falls into the Severn near Llandrinio. This river is remarkable for the multiplicity and variety of fish which frequent it. Of those rivers which pass through the county, but have their springs in another, the principal are, the Maw,

the Traethbach, the Cieriog, the Dee, and the Dovey: all of which will be found more particularly noticed in our account of the respective counties to which they seem more properly to belong, under their appropriate names.

The climate of this county varies in different districts. In those parts which have been mentioned as more elevated than the rest, it is extremely cold and bleak; and in the narrow vallies the wind is almost constantly high, and very frequently boisterous. The westerly winds are prevalent during nine months of the year, and the easterly the remaining three. These last are usually accompanied with fleet and rains, but seldom blow so strong as those from the S.W. or N.W. which commonly prove fatal to the fruit both on the higher grounds and in the vallies. The soil of the mountains here, partaking of the nature of their substrata, is for the most part of a schistose kind; that in the vales was doubtless originally of the same description, but in consequence of cultivation now approaches very nearly to a clayey substance.

It has already been observed, that not above one-half of Montgomeryshire is in a state of cultivation, the rest being either covered with wood, or lying in a waste condition. Of the cultivated lands, about one-third has been mentioned as arable; the other two-thirds being usually laid down with grass. The most common arable crops are oats, barley, wheat and rye. Hemp is likewise grown in considerable quantity in the eastern division of the county; almost every cottage having what is called a hemp-yard attached to it. Of the grass lands only a small portion, compared with their extent, are sufficiently fertile to be adapted for fattening cattle. Indeed that object is seldom attempted, except in some particular spots in the vales of the Severn, and of the Vyrnwy. The woodlands comprehend several very valuable and extensive plantations. Montgomeryshire, in fact, is still by far the best wooded county in Wales, and was formerly regarded as a valuable depôt of oak for the use of the navy. Within the last fifty years, however, large quantities of that noble tree have been felled; and so little care taken to replace them, that the county has nearly lost all its importance in this respect. The waste lands here are chiefly appropriated to the grazing of oxen, sheep, and horses. The oxen are of different breeds, each of which have their provincial peculiarities. Those of the native breed, which are usually termed the finch-backed kind, are of a brindled colour, short in the leg, and of great depth in the carcase. Those originally from Devonshire have, on the other hand, long legs, and a more compact body, and are consequently better fitted for agricultural purposes than the native sort. A kind from Hereford, distinguished by their white faces, have of late years become very prevalent in the eastern district. Of sheep there are two kinds; the one peculiar to the Kerry hills, and the other chiefly bred on the ridge called Long-Mountain, and some other hills on the borders of Shropshire. The first of these breeds is supposed to be the only variety in Wales which produces perfect wool; that of the other breeds being usually more or less debased by the intermixture of coarse long hairs, denominated by dealers kemps. Its discriminating characteristics are large wide cheeks, covered with wool, a bunchy fore-head, destitute of horns, white woolly legs, and a broad beaver-like tail. The second kind also affords wool of a superior quality, but in much less quantity. Horses of very different sizes and properties are reared in Montgomeryshire. The hilly districts are remarkable for a race of small ponies, called merlins, which being left to range over the mountains, as well during winter as summer, till at least three years old, are in consequence a very hardy race. These are chiefly used as beasts of burthen, by the numerous packmen who traverse the country to collect the manufactured



## MONTGOMERYSHIRE.

manufactured articles, or to sell others which the inhabitants may require. For this purpose they are extremely well fitted, custom having taught them to climb the rugged and slippery ascents with a firm and steady step; and it is on that account much to be lamented, that the neglected state in which they are allowed to remain has materially deteriorated the breed. A larger kind of horse, apparently a cross between the merlyn and the English breed, is likewise a native of the hilly districts in Montgomeryshire. The most sizeable of these animals are admirably adapted for the team on the higher grounds, where heavier horses would be egregiously misapplied; and the lesser ones make good roadsters with a light weight. A third breed, of a very superior quality to either of these, is also reared in the more fertile vales here, which some say was introduced from Spain by Robert, earl of Shrewsbury. Queen Elizabeth is further stated to have greatly assisted in perpetuating this breed, by keeping a famous stud of horses and brood mares at Park, in this county.

The chief, or rather the only, manufactured production of Montgomeryshire, is flannel; for though hemp, as has been already said, is grown here in considerable quantity, it is seldom made into any article of use, till it has passed into the hands of the manufacturers of other districts. In former times, the only machinery employed in the manufacture of the flannel was the common weaving machine; all the processes of carding the wool, and spinning into thread, having been executed, in the most literal sense of the term, by the tedious operation of the hand, by farmers and cottagers in their own houses. Of late years, however, the powerful aid of more complicated apparatus has likewise been resorted to; and there are now upwards of forty carding, and several spinning machines, driven by water, in different parts of the county. The most extensive manufactories for weaving are those at Newtown, Berhiew, Welsh-Pool, and Dolydran; and one on the Dulas stream, near Machynlleth, at which, however, cloths are made as well as flanne's. Of these last the finer pieces generally measure about 132 yards, and the inferior ones 110: and as 500 pieces of either kind are frequently sold at the weekly markets, it does not seem to be exceeding truth to average their amount at 300, thereby making the whole annual produce sold out of the county 7800 pieces; which, calculated at the low average of 8*l.* a piece, gives the sum of 62,400*l.* as the total profit arising therefrom, including the value of wool, which may be supposed worth something more than 18,000*l.*

The roads in this county are, perhaps without exception, the worst within the limits of North Wales, especially in the vallies; but this deficiency does not arise so much from any neglect on the part of the proprietors to their formation or repair, as from the want of suitable materials for the purpose; there being no granite or other indurated rock here, as in the other counties, which could be employed to render them firm and compact. They are consequently most commonly formed of the shale and slate stones, of which it has been remarked that the mountains are chiefly composed; and these soft and friable substances soon become reduced, by the pressure and friction they necessarily sustain, to their primitive clay. Hence the roads, even in summer, are often moist and slippery; and in winter are so deep and clammy, as to be nearly impassable for carts of a heavy burthen. But to the honour of the county, though the roads are thus unavoidably of a bad texture, the bridges are generally excellent, and more numerous than those of any other county in the principality, when considered in reference to the comparative extent of its cultivated lands.

Many interesting remains of antiquity of various descrip-

tions have been discovered or traced, at different periods within the limits of Montgomeryshire. The Roman station, Mediolanum, is fixed by several able antiquaries in the vicinity of Meifod, or Meivod, which, as noticed above, afterwards became the residence of the Powysian monarchs. The station Maglona is likewise, with great probability, placed at or in the vicinity of Machynlleth, as many vestiges of walls, and the remains of two forts evidently Roman, are still distinctly visible there. Many Roman coins have also been dug up at this place; and two miles from it is a spot, yet retaining the appellation of Cefn Caer, or the back part of the city. Machynlleth afterwards became noted as the town where the celebrated Owen Glyndwr assembled the estates of Wales in 1402, when his title to the principality was solemnly acknowledged. The senate house, in which this convocation was held, is now degraded, by being converted into a stable; but its spacious door-way sufficiently evinces its occupancy to have been once more honourable. (See MACHYNLLETH.) At Montgomery are the ruins of the celebrated castle of that name; and close to it is a British and a Saxon encampment, the former remarkable both for its strength and extent. On the west side of the road from this town to that of Newtown stands the ancient fortress of "Dolforwyn-Castle," said by Dugdale to have been the work of Dafydd-ap-Llewelyn, a prince who reigned from the year 1240 to 1246; but referred by a Welsh writer, John Dafydd Rhys, to a much earlier date. Caer-Sws, or Caers-goose castle, on the north bank of the Severn, is considered by some to have been a Roman station, though not mentioned in any of the Itineraries. Extensive traces of buildings, ranged in streets intersecting each other at right angles, have been discovered in the fields, adjacent to the village. Two encampments are situated at a little distance, where some inscribed bricks have been dug up; and close to them appear considerable vestiges of a Roman road, running in a direction from Caer-Sws to Meifod. Several encampments, both Roman and British, are likewise discovered in the neighbourhood of Llanfair and Welsh-Pool. Near the latter town was situated the abbey of Ystrat-Marchell, founded in 1170, for monks of the Cistercian order. A mile from hence is Powis castle, a venerable mansion, constructed of red sand-stone, and standing on the ridge of a lofty rock. This castle makes a considerable figure on the pages of history, and is now the chief seat of the noble family of Clive, to which the adjoining village gives the title of marquis. (See WELSH-POOL.) Besides these, many other relics of antiquity in Montgomeryshire might be noticed, would the limits of an article like the present allow of greater digression; but as that cannot be permitted, we shall only further mention the "Dyke of Offa," which runs nearly through the whole eastern side of the county, and which is justly ranked among the most extraordinary efforts of human labour in Great Britain.

Montgomeryshire, in a political point of view, is divided into nine hundreds, comprising forty-nine parishes, one borough-town, Montgomery, and six market-towns, *viz.* Welsh-Pool, Llanfyllin, Llanfair, Machynlleth, Newtown, and Llanfynydd. The names of the hundreds are Llanfyllin, Denddwr, Pool, Cawrfe, Mathrafal, Machynlleth, Llanfynydd, Newtown, and Montgomery. This county sends two representatives to parliament, one as knight of the shire, and another as burghers for the borough. Its honoral distinctions are confined to two families; that of Clive, already mentioned, and that of Herbert, which holds the dignity of earl of Pembroke and Montgomery. By the returns made to parliament in 1801, the amount of its population was 47,558 persons, *viz.* 22,494 males, and 25,064 females;



males; of which number, 6233 were reported as employed in the various departments of trade and manufacture, and 13,082 in the labours of agriculture. The money raised here for the use of the poor, in 1803, amounted to the sum of 22,988*l*. In respect to ecclesiastical jurisdiction, the whole county is included within the province of Canterbury, but is divided among the three dioceses of Bangor, Hereford, and St. Asaph. Davies's Agricultural Report of North Wales, 8vo. Beauties of England and Wales, by Mr. Evans, vol. xvii. Wynne's History of Wales.

**MONTGUYON**, a town of France, in the department of the Lower Charente, and chief place of a canton, in the district of Jonzac. The place contains 1298, and the canton 8847 inhabitants, on a territory of 372½ kilometres, in 14 communes.

**MONTH**, in the *Computation of Time*, the twelfth part of the year.

Among the ancient Greeks, the year was divided into twelve months, which contained thirty and twenty-nine days alternately; but so as the months of thirty days always went before those of twenty-nine; the former were termed *πληρεις*, full, and *δεκαήμενοι*, as ending on the tenth day; the latter were called *κοίλοι*, hollow, and from their ending on the ninth day, *ενναήμενοι*.

In order to understand their method of reckoning the days of the month, it must be considered that every month was divided into *τριαδεχαιμερα*, or three decads of days; the first decad they called the *μηνος αρχομενος*, or *ισαμενος*; the second, *μηνος μεσηνιος*; the third, *μηνος φινιος*, or *παυσημενος*, or *λεησιος*. Whence the first day of the month was called *νεομηνια*, as falling upon the new moon, and *πρωτη αρχομενος*, or *ισαμενος*, as being the first day of the first decad; the second day was termed *δευτερα ισαμενος*; the third, *τρια ισαμενος*; and so on to the *δεκατη ισαμενος*.

The first day of the second decad, which was the eleventh day of the month, was called *πρωτη μεσηνιος*, or *πρωτη επιδεκα*; the second of this decad, *δευτερα μεσηνιος*, or *επιδεκα*; and so on to *εκατη*, the twentieth, which was the last of the second decad.

The first day of the third decad was termed *πρωτη επ' εκαδι*; the second, *δευτερα επ' εκαδι*, and so of the rest. Sometimes they inverted the numbers of this last decad, the first being called *τριησιος δεκατη*; the second, *φθισιος εννατη*; the third, *φθισιος ογδοη*; and so on to the last day of the month, which was called *Δημητριας*, *Demetrias*, from Demetrius Poliorcetes; before whose time, particularly in Solon's laws, it was called *ηη και νηα*, the old and new; because the new moon falling out on that day, part of it belonged to the old moon, and part to the new. It was also called *τριακος*, the thirtieth; and that not only in the months which consisted of thirty days, but also in those of twenty-nine: for in these, according to some accounts, the twenty-second day was omitted; or, according to others, the twenty-ninth: but which day soever was omitted in computation, the thirtieth was constantly retained. Hence, according to Thales's first scheme, all the months were called months of thirty days; though, by Solon's regulation, half of them contained only twenty-nine: and the lunar year of Athens was called a year of three hundred and sixty days; though really after Solon's time, it consisted of no more than three hundred and fifty-four. Vide Pott. Archæol. Gr. lib. ii. cap. 26.

The names of the months being various in different parts of Greece, it will be sufficient particularly to consider those of Athens, barely mentioning those of others that correspond with them. 1. Hecatombæon, or Ecatombæon. 2. Metagitnion. 3. Boedromion. 4. Mæmæcteron. 5. Pyanep-

fion. 6. Anthesterion. 7. Posidion. 8. Gamelion. 9. Elaphebolion. 10. Munychion. 11. Thargelion. 12. Scirophorion.

As the Roman months were the same with those now in use among the Europeans, we shall only refer to the articles **CALENDAR** and **CALENDS**, where the manner of their computation is explained.

The Hebrew months were originally reckoned in order, as the first, second, &c. but after the Babylonish captivity, the Israelites borrowed the names of their months from the Chaldeans and Persians: and they were distinguished in the sacred and civil year as follows. In the sacred year Nisan, answering to our March, Ijar to April, Sivan to May, Thammuz to June, Ab to July, Elul to August, Tizri to September, Marshevan to October, Casleu to November, Thebet to December, Sebat to January, and Adar to February. In the civil year, Tizri corresponding to September, Marshevan to October, Casleu to November, Thebet to December, Sebat to January, Adar to February, Nisan to March, Ijar to April, Sivan to May, Thammuz to June, Ab to July, and Elul to August.

Time, we have observed, is duration marked out for certain uses, and measured by the motions of the heavenly bodies.

Hence result divers kinds of years and months, according to the particular luminary by whose revolutions they are determined, and the particular purposes they are destined for; as *solar* months, *lunar* months, *civil* months, *astronomical* months, &c.

**MONTH, Solar**, is the space of time in which the sun moves through one entire sign of the ecliptic.

Hence, if regard be had to the sun's true motion, the solar months will be unequal; since the sun is longer in passing through the summer signs, than through those of the winter.

But as he constantly travels through all the twelve in 365 days, 5 hours, and 49 minutes, the quantity of a mean month will be had by dividing that number by 12. On this principle, the quantity of a solar month will be found 30 days, 10 hours, 29 minutes, 5 seconds.

**MONTHS, Lunar**, are either *synodical*, *periodical*, or *illuminative*.

**MONTH, Lunar synodical**, called also, absolutely, *lunar* month, and *lunation*, is the space of time between two conjunctions of the moon with the sun; or between two new moons. (See **SYNODICAL Month**, and **LUNATION**.) The quantity of the synodical month, is 29<sup>d</sup> 12<sup>h</sup> 44<sup>m</sup> 3<sup>s</sup> 11<sup>m</sup>. See **MOON**.

**MONTH, Lunar periodical**, is the space of time in which the moon makes her round through the zodiac; or in which she returns to the same point.

The quantity of this month is 27<sup>d</sup> 7<sup>h</sup> 43<sup>m</sup> 8<sup>s</sup>.

The ancient Romans made use of lunar months, and made them alternately 29 and 30 days: and they marked the days of each month by three terms, *viz. calends, nones, and ides*.

**MONTH, Lunar illuminative**, is the space from the first time of the moon's appearance after new moons, to her first appearance after the new moon following.

Hence, as the moon appears sometimes sooner after the new moon, and sometimes later; the quantity of the illuminative month is not always the same. By this month the Turks and Arabs reckon.

**MONTH, Astronomical** or *Natural*, is that measured by some exact interval corresponding to the motion of the sun, or moon.

Such are the lunar and solar months above mentioned.

Where



Where note, that these months can be of no use in civil life, where it is required that the months begin and end on some certain day. For this reason, recourse is had to another form of months.

**MONTH, Civil or Common,** is an interval of a certain number of whole days, approaching nearly to the quantity of some astronomical, either lunar or solar, month.

Civil months are various, according to the astronomical month to which they are accommodated.

**MONTHS, Civil lunar,** are to consist alternately of 29 and 30 days. Thus will two civil months be equal to two astronomical ones, abating for the odd minutes; and, consequently, the new moon will be thus kept to the first day of each civil month for a long time together. However, to make them keep constant pace with the civil months, at the end of each 948 months, a month of 29 days must be added; or else every 33d month must consist of 30 days.

This was the month in civil or common use among the Jews, Greeks, and Romans, till the time of Julius Cæsar.

**MONTHS, Civil solar,** are to consist alternately of 30 and 31 days, excepting one month of the twelve, which for every fourth year should consist of 30 days, and for the other years of 29. The form of civil months was introduced by Julius Cæsar.

Under Augustus, the sixth month, till then from its place called Sextilis, was denominated Augustus, in honour of that prince; and, to make the compliment yet the greater, a day was added to it; so that it now consisted of 31 days, though till that time it had only contained 30; to make up for which, a day was taken from February: so that henceforward it only consisted of 28 days, and every fourth year of 29; though before it had ordinarily consisted of 29 days, &c. and such are the civil or calendar months which now obtain through Europe. See CALENDAR.

**MONTH, Philosophical,** among *Alchemists*, is the space of forty days and nights.

**MONTH, Dracontic, Embolismic, Fence, Twelve.** See the adjectives.

**MONTH-Climate.** See CLIMATE.

**MONTHERME,** in *Geography*, a town of France, in the department of the Ardennes, and chief place of a canton, in the district of Mézières; 9 miles N of Charleville. The place contains 1415, and the canton 5750 inhabitants, on a territory of 132½ kilometres, in 11 communes.

**MONTHLY COURSES.** See MENSES.

**MONTHOIS,** in *Geography*, a town of France, in the department of the Ardennes, and chief place of a canton, in the district of Vouziers. The place contains 610, and the canton 6606 inhabitants, on a territory of 195 kilometres, in 21 communes.

**MONTHOUMET,** a town of France, in the department of the Aude, and chief place of a canton, in the district of Carcassonne. The place contains 279, and the canton 4354 inhabitants, on a territory of 277½ kilometres, in 18 communes.

**MONTHOUREUX-SUR-SAÔNE,** a town of France, in the department of the Vosges, and chief place of a canton, in the district of Mirecourt; 4 miles S.S.W. of Darney. The place contains 1351, and the canton 7316 inhabitants, on a territory of 255 kilometres, in 15 communes.

**MONTI BAY.** See PORT MULGRAVE.

**MONTIA,** in *Botany*, named by Micheli in honour of a very meritorious author, Joseph Monti, professor of Botany at Bologna, who flourished early in the last century. In 1719, he published an account of the grasses in his neighbourhood, and this treatise is one of the earliest at-

tempts to illustrate the characters of this curious but difficult tribe of plants. Scheuchzer, Micheli, and Monti, devoted their several labours to this subject much about the same period.—Mich. Nov. Gen. 17. Linn. Gen. 41. Schreb. 56. Willd. Sp. Pl. v. 1. 487. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 161. Prodr. Fl. Græc. v. 1. 77. Ait. Hort. Kew. ed. 2. v. 1. 183. Juss. 313. Lamarck Illustr. t. 50. Gærtn. t. 129. (Cameraria; Dill. Gen. 124.)—Class and order, *Triandria Trigynia*. Nat. Ord. *Portulacæ*, Juss.

**Gen. Ch.** *Cal.* Perianth inferior, of two, ovate, concave, obtuse, erect, permanent leaves. *Cor.* of one petal, cloven into five segments, of which the three alternate ones are smaller, and each bearing a stamen. *Stam.* Filaments three, capillary, the length of the corolla, and inserted into it; anthers small. *Pist.* Germen superior, top-shaped; styles three, hairy, spreading; stizmas simple. *Peric.* Capsule top-shaped, obtuse, inclosed by the calyx, of one cell, and three valves. *Seeds* three, roundish.

**Obs.** The calyx is frequently found with three leaves instead of two, in which case there are often five stamens.

**Eff. Ch.** Calyx of two leaves. Corolla of one irregular petal. Capsule with one cell, three valves, and three seeds.

1. *M. fontana.* Water Chickweed, or Blinks. Linn. Sp. Pl. 129. Engl. Bot. t. 1206. Curt. Lond. fasc. 3. t. 8.—Found chiefly in wet places, on the gravelly parts of heaths where the water stagnates in winter; also in rivulets and marshes. It flowers in the spring, and ripens its seeds in June.—*Root* annual, fibrous. *Stem* much branched from its very base, prostrate in the lower part, and frequently taking root at the joints, leafy, tinged with red. *Leaves* opposite, spatulate, entire. *Flowers* stalked, in terminal clusters, white, expanding only in the brightest sunshine, at other times nearly closed, whence we presume its vulgar appellation, Blinks.—*Seeds* kidney-shaped, large, rough, black.—The whole herb is smooth and somewhat succulent, much resembling *Elatine Hydropiper* in its general aspect.—Dr. Smith observes that “Micheli’s name of *Montia* was retained by Linnæus, in preference to *Cameraria* previously given to this genus by Dillenius, because Plumier had already given the latter name to an American plant, more worthy to commemorate so great a botanist as Camerarius.”

**MONTICELLI, ANGELO MARIA,** in *Biography*, first appeared on the opera stage at Rome in the year 1730; and having a beautiful face and figure, began in that city, where no women are allowed to mount the stage, by representing female characters. His voice was clear, sweet, and free from defects of every kind. He was a chaste performer, and never hazarded any difficulty which he was not certain of executing with the utmost precision. To his vocal excellence may be added the praise of a good actor; so that nothing but the recent remembrance of the gigantic talents of Farinelli, and the grand and majestic style of Senesino, who immediately preceded him, could have left an English audience any thing to wish.

He was invariably perfect as a singer and actor in every part in which we saw and heard him perform; but in the opera of *Olimpiade*, set by Pergolesi, whose music, in 1742, was heard in England for the first time, in the parting scene between Megacles and Aristeia, his singing and acting were exquisite, particularly in the aria parlante, “Se cerca se dice.”

He arrived here with Amorevoli and the Visconti, and remained in England in great and just estimation, till the rebellion broke out in 1745, when popular prejudice running strong against foreign performers, who were Roman Catholics, the Lyric theatre was shut up till the next year, 1746, when Monticelli



Monticelli performed in Gluck's opera of "La Caduta de' Giganti," and in "Artamine."

He sung in an opera composed by Bononcini in Vienna, at the peace in 1748; went to Venice the next year; then quitting that city, he went to Dresden, where he died in 1758.

MONTICELLO, in *Geography*, a town of Corsica; 10 miles E.N.E. of Calvi.

MONTIEL, a town of Spain, in New Castile, formerly the see of a bishop; 18 miles W.S.W. of Alcaraz.

MONTIER-SUR-SAUX, a town of France, in the department of the Meuse, and chief place of a canton, in the district of Bar-sur-Ornain; nine miles W. of Gondrecourt. The place contains 1271, and the canton 5723 inhabitants, on a territory of 200 kilometres, in 14 communes.

MONTIERENDER, a town of France, in the department of the Upper Marne, and chief place of a canton, in the district of Wassy; 12 miles S. of St. Dizier. The place contains 1478, and the canton 8133 inhabitants, on a territory of 272½ kilometres, in 15 communes.

MONTIERRA, a town of the island of Sardinia; nine miles E.S.E. of Bosa.

MONTIFRINGILLA, in *Ornithology*, the name of a bird, known in English by the name of the *bramble*, *brambling*, or *mountain-finch*; and called by the ancients, *orospiza*. It is a species of *Fringilla*; which see.

MONTIGNAC, in *Geography*, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Sarlat; 12 miles N. of Sarlat. The place contains 3000, and the canton 12,688 inhabitants, on a territory of 315 kilometres, in 14 communes. N. lat. 45° 3'. E. long. 1° 14'.

MONTIGNY-SUR-AUBE, a town of France, in the department of the Côte-d'Or, and chief place of a canton, in the district of Chatillon; nine miles N.E. of Chatillon. The place contains 690, and the canton 7869 inhabitants, on a territory of 322½ kilometres, in 16 communes.

MONTIGNY-source-Meuse, a town of France, in the department of the Upper Marne, and chief place of a canton, in the district of Langres; 12 miles W.N.W. of Bourbonne. The place contains 1061, and the canton 5714 inhabitants, on a territory of 192½ kilometres, in 15 communes.

MONTILLA, a town of Spain, in the province of Cordova, containing two parishes, seven convents, and about 4000 inhabitants; 18 miles S.S.E. of Cordova. N. lat. 37° 40'. W. long. 4° 40'.

MONTINIA, in *Botany*, named by Thunberg in honour of his much esteemed friend Dr. Laurence Montin, a distinguished pupil of Linnæus, who died in 1785, aged 62. This gentleman was the maternal uncle of the late learned Mr. Dryander, so well known to all the botanists of this country, and has published various botanical tracts in the Stockholm Transactions. His inaugural dissertation, published under the presidency of Linnæus, March 28th, 1750, is a learned treatise on the genus *Splachnum*, with various botanical remarks made in a journey to Lapland, undertaken at the persuasion of his great preceptor. This dissertation is printed in the second volume of the *Amanitates Academicæ*. —Thunb. Nov. Gen. 27. Linn. Suppl. 65. Schreb. 681. Mart. Mill. Dict. v. 3. Juss. 318. Lamarck Illustr. t. 8c8. Gærtn. t. 33.—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Calycantemæ*, Linn. *Onagræ*, Juss.

Gen. Ch. Cal. Perianth superior, four-toothed, very short, erect. Cor. Petals four, ovate, very obtuse, spreading, inserted into the calyx. Stam. Filaments four, within

the teeth of the calyx, very short; anthers linear, erect. Pist. Germen inferior, oval, smooth; style cylindrical, thick, half cloven, shorter than the corolla; stigmas two, kidney-shaped. Peric. Capsule ovate-oblong, of two cells, bursting longitudinally; partition thick, two-lobed. Seeds numerous, imbricated, ovate, compressed, winged at the margin.

Obs. This genus was originally referred to the class *Dioecia*, where it is to be found in all the authors above quoted. We think it most convenient however to place it in *Tetrandria*, whither it has been referred by Dr. Smith, who found both stamens and pistils, or at least their rudiments, in every flower which he examined.

Eff. Ch. Calyx superior, four-toothed. Capsule two-celled. Seeds several, flat.

1. *M. caryophyllacea*. Glaucoous Montinia. Thunberg in the Lund. Transf. v. 1. 109. Nov. Gen. 28. Sm. Spicil. Bot. 14. t. 15. (*M. acris*; Linn. Suppl. 427.)—Found on sandy hills at the Cape of Good Hope, and introduced into this country by Mr. Francis Masson, in 1774. It flowers in July. Root perennial. Stem shrubby, roundish, smooth and branched. Branches alternate, rather waved, round, glaucous, leafy. Leaves on short stalks, alternate, lanceolate, acute, entire, veined, slightly succulent, glaucous. Foot-stalks carinated, spreading at the base, ciliated at the margin, concave, turning of a rusty red. Flowers terminal, one or more, erect, on short stalks, white, shaped like cloves, whence the specific name, occasionally pentandrous according to Thunberg. Capsule (in the Linnæan herbarium) an inch long, oval, coriaceous, ribbed.

MONTJOIE, in *Geography*, a town of France, in the department of the Roer, and chief place of a canton, in the district of Aix-la-Chapelle. The place contains 2912, and the canton 15,522 inhabitants, in 27 communes.

MONTJOUET, a town of France, in the department of the Doria; 10 miles S.E. of Aosta.

MONTJOY, LA, a town of France, in the department of the Lot and Garonne; eight miles S.E. of Nerac. N. lat. 44° 4'. E. long. 0° 36'.

MONTIRA, in *Botany*, so named by Aublet, after Mons. de Monti, member of the Superior Council of Cayenne, one of his patrons, on whose estate at Aroura the plant was found.—Aubl. Guian. v. 2. 637. Juss. 122. Lamarck Illustr. t. 523.—Class and order, *Didynamia Angiospermia*. Nat. Ord. *Personate*, Linn. *Scrophulariæ*, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, in five deep, lanceolate, acute, spreading, nearly equal segments. Cor. of one petal, funnel-shaped; tube much longer than the calyx, swelling upwards, slightly inflated, incurved; limb spreading, in five deep, roundish, acute, equal lobes. Stam. Filaments four, much shorter than the tube, inserted into its lower part, thread-shaped, smooth, two of them longest; anthers oblong, simple, of two cells. Pist. Germen superior, of two round lobes, seated on a glandular disk; style cylindrical, the length of the stamens; stigma capitate, furrowed. Peric. Capsule of two round lobes and two cells, with four valves, separating longitudinally at the outer sides. Seeds very numerous, very minute, attached to the inner angle of the cells.

Eff. Ch. Calyx deeply five-cleft, spreading. Corolla funnel-shaped, incurved; limb in five equal segments. Capsule of two round lobes, two cells, and four valves. Seeds numerous, minute.

1. *M. guianensis*. Aubl. t. 257.—Gathered by Aublet in a cotton-field, at the place above-mentioned, and no where else, flowering in June. Root fibrous, probably annual. Stem seven or eight inches high, slightly forked, leafy, smooth, with four sharp angles. Leaves opposite at each joint, sessile, spreading,



spreading, lanceolate, acute, entire, three-ribbed, smooth, pale. *Flowers* three together, in sessile, solitary, simple clusters, at the fork of the stem, and summits of its branches. *Corolla* white, scarcely half an inch long. There is no appearance of any fifth, or barren, *filament*.

MONTIRONE, in *Geography*, a town of France, in the department of the Mela; seven miles S. of Brescia.

MONTVILLIERS, a town of France, in the department of the Lower Seine, and chief place of a canton, in the district of La Havre; six miles N. of Havre. The place contains 4000, and the canton 14,695 inhabitants, on a territory of 122½ kilometres, in 20 communes. N. lat. 49° 33'. E. long. 0° 17'.

MONTLIEU, a town of France, in the department of the Lower Charente, and chief place of a canton, in the district of Jonzac; 33 miles S.S.E. of Saintes. The place contains 655, and the canton 8072 inhabitants, on a territory of 107½ kilometres, in 15 communes. N. lat. 45° 15'. W. long. 0° 11'.

MONT-LOUIS, a town of France, in the department of the Eastern Pyrenées, and chief place of a canton, in the district of Prades; 15 miles W.S.W. of Prades. The town is well laid out, and fortified with a citadel, arsenal, magazines, &c. The place contains 418, and the canton 6140 inhabitants, on a territory of 390 kilometres, in 17 communes.

MONTLUC, BLAISE DE, in *Biography*, a celebrated French general, was born in 1500, of a noble family near Condom. He rose through the different ranks in the army to that of marshal in France. His first services were in Italy, and at the battle of Pavia, in 1525, he was taken prisoner. In the wars of Piedmont he served with great reputation; and in 1546, he recovered Boulogne from the English. The city of Sienna in Tuscany, having driven out the imperial garrison, and solicited the protection of France, Montluc was appointed to command the forces sent thither in 1554. He sustained a siege of eight months against the imperial army commanded by the marquis of Marignol, who was obliged, after several attacks, to convert the siege into a blockade. It was not till the garrison and inhabitants had endured the utmost extremity of famine, that the place capitulated, when Montluc and his troops marched out with the honours of war. He commanded in Guienne, during the wars which ravaged France on account of religion, and defeated the Calvinists in several actions. But he was guilty of great cruelties to the vanquished. At the siege of Rabastens, in 1570, he was so severely wounded in the face, as to be obliged always to wear a mask to hide his deformity. He died on his estate in 1575. At the age of 75 he wrote the history of his own life, printed at Bourdeaux, in 1592, folio, and several times since. Moreri.

MONTLUÇON, in *Geography*, a town of France, and principal place of a district, in the department of the Allier; 33 miles E. of Guerit. The place contains 4420, and the canton 13,784 inhabitants, on a territory of 315 kilometres, in 16 communes. N. lat. 46° 20'. E. long. 2° 40'.

MONTLUEL, a town of France, in the department of the Ain, and chief place of a canton, in the district of TREVoux. The place contains 3651, and the canton 11,308 inhabitants, on a territory of 185 kilometres, in 15 communes.

MONTMARAU, a town of France, in the department of the Allier, and chief place of a canton, in the district of Montluçon; 22 miles S.W. of Moulins. The place contains 890, and the canton 9976 inhabitants, on a territory of 355 kilometres, in 19 communes. N. lat. 46° 19'. E. long. 3° 2'.

MONTMARTIN-SUR-MER, a town of France, in the department of the Channel, and chief place of a canton, in the district of Coutances; four miles S.W. of Coutances. The place contains 1168, and the canton 12,576 inhabitants, on a territory of 137½ kilometres, in 11 communes.

MONTME'DY, a town of France, and principal place of a district, in the department of the Meuse; situated on the river Cher, and divided by it into Upper and Lower; 21 miles N. of Verdun. The place contains 1889, and the canton 11,491 inhabitants, on a territory of 245 kilometres, in 27 communes. N. lat. 49° 28'. E. long. 5° 26'.

MONTMEILLON, a pleasant French muscadet wine, from the neighbourhood of Ricz, in Provence.

MONTMELIAN, in *Geography*, a town of France, in the department of Mont-Blanc, and chief place of a canton, in the district of Chambéry; situated near the Isère, and containing one church and two convents; the adjacent country is agreeably diversified with hills and mountains, and for six miles about it covered with vines, which yield good wine. The fortress is on an eminence, and inaccessible except towards the town, and is well furnished with means of security and defence. The castle is the residence of the governor. The importance of this place depends upon its being the key of the whole country, and therefore it is usually well garrisoned; seven miles S.S.E. of Chambéry. The place contains 1165, and the canton 11,239 inhabitants, on a territory of 172½ kilometres, in 18 communes.

MONTMIRAIL, a town of France, in the department of the Marne, and chief place of a canton, in the district of Epernay; 12 miles N.W. of Sezannes. The place contains 2098, and the canton 8009 inhabitants, on a territory of 267½ kilometres, in 23 communes.—Allo, a town of France, in the department of the Sarthe, and chief place of a canton, in the district of Mamers; 24 miles N.E. of Le Mans. The place contains 864, and the canton 7431 inhabitants, on a territory of 140 kilometres, in 10 communes. N. lat. 48° 52' 8". E. long. 3° 32' 16".

MONTMIRAIL, *Castelnau de*, a town of France, in the department of the Tarn, and chief place of a canton, in the district of Gaillac. The place contains 2523, and the canton 9715 inhabitants, on a territory of 162½ kilometres, in 15 communes.

MONTMIREY-LE-CHATEAU, a town of France, in the department of the Jura, and chief place of a canton, in the district of Dôle; seven miles N. of Dôle. The place contains 416, and the canton 6594 inhabitants, on a territory of 120 kilometres, in 19 communes.

MONTMOREAU, a town of France, in the department of the Charente, and chief place of a canton, in the district of Barbezieux; 12 miles E.S.E. of it. The place contains 411, and the canton 9449 inhabitants, on a territory of 220 kilometres, in 16 communes.

MONTMORENCI, ANNE DE, in *Biography*, second son of William, lord of Montmorenci, representative of one of the most illustrious houses in France, was born in the year 1493. He received the female christian name Anne from his godmother, queen of France. He was brought up at the court of Francis I., and was present at the battle of Marignan, in 1515. He was one of the train of that king, at the celebrated interview with Henry VIII. between Guines and Ardres, and was afterwards sent to England to oppose the machinations of Charles V. He was made marshal of France in 1522, and in the following year obliged the constable of Bourbon to raise the siege of Marfeilles. For his great services the government of Languedoc was conferred upon him, and in 1525 he was made prisoner with his king at the battle of Pavia. After his liberation he was employed



employed on many important occasions, and contributed to the ruin of the army with which the emperor, in person, had invaded Provence. By his sovereign, Francis, he was entrusted with the sword of constable in 1538, whom he accompanied to Nice, where a truce was signed between the two rival monarchs, in the presence of the pope. When Charles V., on occasion of the revolt of the people of Ghent, had requested a passage through France, under promise to restore Milan, Montmorency advised his sovereign to rely on his promise, which was not kept, and which afterwards excited the displeasure of Francis against his constable, who was banished from court, and not permitted to return till the accession of Henry II. By this prince he was treated with every respect and confidence, and was sent by him, in 1548, to Guienne to suppress an insurrection on account of the tax on salt, on which occasion he treated the people of Bourdeaux with great severity. After this he was again disgraced by the intrigues of Catherine de Medicis, Charles IX. recalled him, and he served against the Calvinists, dissipating their assemblies, and burning the pulpits of their ministers; but in the year 1562 he was taken prisoner by them at the battle of Dreux, which battle was remarkable for the capture of the opposing generals Condé and Montmorency. Being liberated the following year, he took Havre-de-Grace from the English. On the renewal of hostilities between the two religious parties, he attacked the army of the prince of Condé at St. Dennis, in November 1567, and lost his life in that action. He received eight wounds, of which the last was a pistol-shot in his loins, but he still retained strength enough to beat out the teeth of his assailant with the hilt of his sword. Finding himself mortally wounded, he began to prepare for his last moments: a monk offered to assist him in this important business, on which the dying general asked, "Do you think that a man who has lived four-score years with honour does not know how to die in a quarter of an hour?" Almost within that period he expired, at the age of 74, and was interred with great honours at Paris. He was one of the most illustrious characters of the age in which he lived, and was accounted very pious, though his religion was much more that of a soldier than a Christian. Nevertheless he has obtained the title of a "Christian hero." He never omitted the repeating of his paternosters, but in the midst of them he would frequently order his soldiers to be flogged, or shot, or whole villages to be burnt, and then proceed in his prayers with the most perfect *sang froid*. The political maxim by which he was governed was "One faith; one law; one king," and he steadily supported the royal authority amidst all the storms and vicissitudes of faction. Moreri. Hist. of France, 1790.

MONTMORENCI, HENRY, *Duke of*, grandson of the preceding, was born in 1595. He was, in early life, distinguished for a fine person, joined to the splendid qualities which attract general admiration. He was raised to the office of high admiral of France at the age of eighteen, and served with great courage and success against the Protestants in Languedoc, and other places. For the important services which he performed, he was rewarded with the staff of marshal, added to the government of Languedoc, and he might have attained the highest honours in the way of his duty, when disappointment of the office of constable rendered him a malcontent, and brought on his ruin. He excited an insurrection, and put himself at the head of a body of forces, with which he encountered marshal Schomberg. In the action he was surrounded and taken prisoner. Knowing the rigour of Richelieu's government, he, from that hour, had no hopes of a pardon. He was brought to trial, and convicted; and on being advised to appeal to a higher court, he

VOL. XXIV.

said, "I will not use any chicanery even to save my life." His guilt was clear, but no criminal was ever more pitied, and no one for whom more intercession was made. He died with that humility and resignation which a sense of religion inspires; and, leaving no issue, the principal branch of the house of Montmorency terminated with him. Though he had not been faithful as a husband, yet his wife cherished his memory with so much affection as to quit the world, and retire into a convent. Moreri.

MONTMORENCY, MATTHEW DE, called the *Great*, a distinguished general, who signalized his valour at the battle of Pont à Bouvines in 1214, and the year following was employed against the Albigenes in Languedoc, for which services he received the sword of constable of France, and was made general of the army. He afterwards took several places from the English. Louis VIII. committed his son to the care of the constable, who, by his prudence, dissolved a league which had been formed against the queen-mother, during the minority of Louis IX. He died in 1230. Moreri.

MONTMORENCY, in *Geography*, a town of France, and seat of a tribunal, in the department of the Seine and Oise; seven miles N. of Paris. N. lat. 48° 59'. E. long. 2 24'.

MONTMORENCY, a river of Canada, which, after pursuing an irregular course through a woody and rocky country, runs into the river St. Laurence, about seven miles below Quebec. It descends into the St. Laurence from the brink of a precipice in an uninterrupted and nearly perpendicular fall of 240, says Mr. Weld, or as others have said, 264 feet. The breadth of the river at the top, from bank to bank, is about 50 feet. In its fall, the water has the appearance of snow, as when thrown in heaps from the roof of a house, and it seemingly descends with a very slow motion. The spray at the bottom is considerable, and when the sun happens to shine bright in the middle of the day, the prismatic colours are exhibited in it in all their variety and lustre. At the bottom of the precipice the water is confined in a sort of basin, as it were, by a mass of rock, extending nearly across the fall, and out of this it flows with a gentle current to the St. Laurence, which is about 300 yards distant. The banks of the Montmorency below the precipice are nearly perpendicular on one side, and on both inaccessible, so that if a person be desirous of getting to the bottom of the fall, he must descend down the banks of the St. Laurence, and walk along the margin of that river, till he comes to the chasm through which the Montmorency flows. To a person failing along the St. Laurence, and passing the mouth of the chasm, the fall appears in great beauty. Weld's Travels, vol. i.

MONTMORENCY, a town of Lower Canada, on the fore-mentioned river. It was on some eminences near this town, that general Wolfe began his attack on the French at Quebec, which was unsuccessful; five miles N.E. of Quebec.

MONTMORILLON, a town of France, the principal place of a district, in the department of the Vienne, on the Gartempe; 22 miles S.E. of Poitiers. The place contains 3036, and canton 8023 inhabitants, on a territory of 335 kilometres, in nine communes. N. lat. 46° 26'. E. long. 0° 57'.

MONTMORIN, a town on the N. bank of Ohio river, 18 miles below Pittsburg, situated on a beautiful plain, very fertile, and abounding with coals.

MONTMORT, PETER RAYMOND DE, in *Biography*, an able mathematician, was born at Paris in the year 1678. He was intended for the profession of the law, to enable him to qualify for a place in the magistracy. Finding his disgust

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to



to this plan insuperable, and that his father would not relax in his intentions, he withdrew into England, whence he passed over into the Low Countries, and travelled into Germany, where he resided with a near relation, M. Chambois, the plenipotentiary of France at the diet of Ratibon. He returned to France in 1699, and in a very short time his father died, leaving him an ample fortune, and at perfect liberty to pursue the bent of his inclinations. From this time he devoted his talents to the study of philosophy and the mathematics, under the direction of the celebrated "father Malebranche," to whom he had, some years before, felt greatly indebted for the conviction of the truth of Christianity, by perusing his work on "The Search after Truth." In 1700 he went a second time to England, and on his return assumed the ecclesiastical habit, and succeeded to a canonry in the church of Notre-Dame, at Paris, on the resignation of his younger brother. About this time he printed, at his own expence, the works of M. Guisnée on "The Application of Algebra to Geometry," and that of Newton on the "Quadrature of Curves." In 1703 he published his "Analytical Essay on Games of Chance," which was most favourably received by men of science in all countries, and contributed greatly to increase the number of his acquaintance and correspondents. A second edition of the "Games of Chance," enlarged and improved, he published in 1714. In the following year he paid a third visit to England, for the purpose of observing a solar eclipse, which was to be total at London, and during his stay in the metropolis of England he was elected a fellow of the Royal Society, to which learned body he soon afterwards transmitted an important treatise on "Infinite Series," which was inserted in the Philosophical Transactions for the year 1717. He was elected an associate of the Royal Academy of Sciences at Paris in 1716, and died at the early age of forty-one, of the small-pox. He sustained all the relations of life in the most honourable manner, and though subject to fits of passion, yet his anger soon subsided, and he was ever ashamed of the irritability of his temper. He could resolve the most difficult problems in company, and among the noise of playful children. He was employed several years in writing "A History of Geometry," but he did not live to complete it. Moreri.

**MONTMORT**, in *Geography*, a town of France, in the department of the Marne, and chief place of a canton, in the district of Eprenay. The place contains 622, and the canton 7075 inhabitants, on a territory of 287½ kilometres, in 25 communes.

**MONTOIRE**, a town of France, in the department of the Loire and Cher, and chief place of a canton, in the district of Vendôme. The place contains 2260, and the canton 11,475 inhabitants, on a territory of 242½ kilometres, in 20 communes.

**MONTONA**, a town of Istria; 16 miles E.S.E. of Umago.

**MONTONA**, an excellent sort of white wine, the produce of Alcudia, in the island of Majorca.

**MONTONE**, in *Geography*, an island in the gulf of Venice, near the coast of Friuli. N. lat. 45° 50'. E. long. 31° 9'.—Also, a river of Italy, which rises in the Apennines, and runs into the Adriatic below Ravenna.

**MONTONG**, a town of Africa, near cape Lopez Gon-salvo; 10 miles N. of Olibato.

**MONT-D'OR**, a mountain of France, in the department of the Puy de Dôme, about 1030 toises above the level of the earth, abounding in curious plants and mineral springs.

**MONTORIO**, a town of Italy, in the Veronese; four miles E. of Verona.—Also, a town of Naples, in Abruzzo

Ultra; six miles S.S.W. of Teramo. N. lat. 42° 33'. E. long. 13° 51'.

**MONTORO**, a town of Spain, in the province of Cordova.

**MONTOUR**, a town of Hindoostan, in Oude; 35 miles W. of Currah.

**MONTOYTO**, a town of Portugal, in Alentejo; 13 miles E. of Evora.

**MONT-PAGNOTE**, *the post of the invulnerable*, an eminence chosen without the reach of the cannon of a place besieged: where curious persons post themselves to see an attack, and the manner of the siege, without being exposed to danger.

**MONTPAON**, in *Geography*, a town of France, in the department of the Aveyron; 12 miles S. of Milhau.

**MONTPELIER**, in *Geography*, a city of France, and capital of the department of the Herault. This city was built on a hill near the river Lez, after Charlemagne had demolished Maguelone, the asylum of the Saracens in their depredations, and the bishop's see was established in this city. An university for the study of medicine was founded here in 1180, and an academy of sciences was instituted in 1706. The streets of this city are narrow, but the houses good: the citadel commands the town and its vicinity. The chief manufacture of this place is verdigris, and its trade, which is considerable, consists of this article, and wool brought hither from the Mediterranean; and also wine, aqua vitæ, Hungary water, cinnamon water, capillaire, essence of bergamot, lemons, &c. and great quantities of woollen carpets, fustians, and silk stockings. These commodities are conveyed by the canal to Cette, which is the sea-port of Montpellier. The city is divided into three sections; occupying a territory of 270 kilometres; the first contains 15,000, and its canton 15,000 inhabitants, in one commune; the second section contains 13,419, and its canton 14,999 inhabitants, in 5 communes; and the third section contains 5494, and its canton 12,346 inhabitants, in 11 communes. The environs of this city are delicious and highly ornamented, and its aqueduct is extensive: it has been particularly celebrated for the salubrity of its air, and its ancient school of medicine. The prospect is singularly extensive and interesting, as it embraces the Pyrenées on one side, and on the other the grander summits of the Alps. Its temperature, according to the estimate of Kirwan, from 1777 to 1781, was 60°.87. The standard temperature being 59°, Montpellier is 1°.87 warmer. Its distance from the Atlantic is 260 miles, by which it should be cooled 1°.6, but its temperature is governed chiefly by that of the Mediterranean, which, lying to the south of it in still warmer latitudes, communicates its temperature to it both summer and winter; but winters, during which easterly winds from the mountains of Savoy and Piedmont prevail, must be much colder. The soil on which Montpellier stands, which is sandy and stony, must contribute much to its heat. N. lat. 43° 36' 29". E. long. 3° 51' 45".

**MONTPELIER**, a post-town of America, in Caledonia county, Vermont, on the N.E. side of Onion river; 43 miles W. from lake Champlain.

**MONTPELLAS**, a town of France, in the department of Mont Blanc; 7 miles E.N.E. of Chambéry.

**MONTPENSIER**, ANNE MARIE LOUISA, *Duchess de*, in *Biography*, the daughter of Gaston, duke of Orleans, brother of Louis XIII., was generally known by the name of *Mademoiselle*, and took the part of Condé in the civil wars. She caused the cannon of the Bastille to be fired on the French troops, and shewed on many occasions a most impetuous spirit. After trying in vain to espouse several sovereign



reign princes, among the rest Charles II. of England, she secretly married the count de Lauzun, who used her with great disrespect and cruelty. She died in 1693. Made-moifelle wrote her memoirs, which are curious, and full of anecdotes, 8 vols. 12mo.; she was also the author of two books of devotion. Moreri.

**MONTPENSIER**, in *Geography*, a town of France, in the department of the Puy-de-Dôme; 9 miles N.N.E. of Riom.

**MONTPEZAT**, a town of France, in the department of the Ardeche, and chief place of a canton, in the district of L'Argentiere; 16 miles W. of Privas. The place contains 2115, and the canton 7709 inhabitants, on a territory of 235 kilometres, in 7 communes.—Also, a town of France, in the department of the Lot, and chief place of a canton, in the district of Montauban; 14 miles N.N.E. of Montauban. The place contains 2684, and the canton 7001 inhabitants, on a territory of 140 kilometres, in 9 communes. N. lat.  $44^{\circ} 14'$ . E. long.  $1^{\circ} 34'$ .

**MONTPOINT**, a town of France, in the department of the Saône and Loire, and chief place of a canton, in the district of Louhans; 7 miles S.S.W. of Louhans. The place contains 2146, and the canton 5974 inhabitants, on a territory of 135 kilometres, in 5 communes.—Also, a town of France, and seat of a tribunal, in the department of the Dordogne; 16 miles N.W. of Bergerac. N. lat.  $44^{\circ} 59'$ . E. long.  $0^{\circ} 14'$ .

**MONTQUELAI**, a town of Persia, in Farsistan, on the N. coast of the Persian gulf; 120 miles S.S.W. of Schiras.

**MONTRACHET**, one of the choicest sorts of white Burgundy, the produce of Beaune, in Poligny. It is much esteemed both in France and abroad.

**MONTREAL**, in *Geography*, a town of France, in the department of the Aude, and chief place of a canton, in the district of Carcassone; 9 miles W. of it. The place contains 3163, and the canton 6484 inhabitants, on a territory of 140 kilometres, in 9 communes.—Also, a town of France, in the department of the Gers, and chief place of a canton, in the district of Condom; 7 miles W. of Condom. The place contains 2565, and the canton 11,090 inhabitants, on a territory of  $257\frac{1}{2}$  kilometres, in 12 communes. N. lat.  $43^{\circ} 58'$ . E. long.  $0^{\circ} 16'$ .—Also, a town of France, in the department of the Sarre; 17 miles W. of Coblentz.

**MONTREAL**, a town of America, reckoned the second city in rank in Lower Canada, situated on an island in the river St. Lawrence; and deriving its name from a very high mountain, about the middle of it. It lies on the opposite side of the river to La Prairie; the two towns being 9 miles apart, and the river about  $2\frac{1}{2}$  miles wide. The current of the river is here very strong, so that vessels encounter immense difficulties in arriving at Montreal; hence it is that the passage from Quebec to Montreal is generally more tedious than that across the Atlantic, and therefore those ships which trade between Europe and Montreal never attempt to make more than one voyage in the year. Notwithstanding the rapidity of the stream, the channel of the river is very deep, and particularly opposite to the town; so that the largest merchant-vessels can there lie so close to the banks, which are in their natural state, that they may be nearly touched with the hand from the shore. This town was laid out in pursuance of the orders of one of the kings of France, which were, that a town should be built as high up on the St. Lawrence as it were possible for vessels to go by sea; and his commands were strictly observed. The town at present contains about 1200 houses, of which 500

only are within the walls, the rest being in the suburbs, which commence from the N., E., and W. gates. The houses in the suburbs are mostly built of wood, but the others are all of stone; none of them are elegant, but many of them are comfortable habitations. In the lower part of the town, towards the river, where most of the shops stand, they have a very gloomy appearance, and look like so many prisons, as they are all furnished, at the outside, with iron shutters to the doors and windows, which are regularly closed towards the evening, in order to guard against fire, from which the inhabitants have often suffered; and, therefore, as an additional security they cover the houses with tin-plates instead of shingles. By law they are obliged to have one or more ladders, in proportion to the size of the house, always ready on the roofs. The streets are all very narrow, three of them run parallel to the river, and these are intersected by others at right angles, but not at regular distances. On the side of the town, farthest from the river, is a small square, called "La Place d'Armes," designed originally for the military to exercise in it; though not now used for that purpose. On the opposite side of the town, towards the water, is another small square, in which the market is held. In Montreal there are six churches, one for English Episcopalians, one for Presbyterians, and four for Roman Catholics. The cathedral church, belonging to the latter, is a very spacious building, containing five altars, all of which are very richly decorated. Almost all the christenings, marriages, and burials of the Roman Catholic inhabitants are performed in this church, on which occasions, as well as before and during the masses, they always ring the bells, which are five in number, to the annoyance of those who are not fond of discordant sounds. The funerals are conducted with great ceremony; the corpse being always attended to the church by a number of priests chanting prayers, and by little boys in white robes and black caps, carrying wax-lights. In Montreal there are also four convents. The barracks are agreeably situated near the river, at the lower end of the town; they are surrounded by a lofty wall, and calculated to contain about 300 men. The walls round the town are generally mouldering, and some of them are in ruins; although the gates are quite perfect. The walls were erected as a defence against the Indians, and they have been found useful even so late as the year 1736. They were also useful on occasion of the large fairs held in Montreal, to which the Indians from all parts resorted with their furs; because they enabled the inhabitants to shut them out at night, when danger might have attended their remaining in a state of intoxication, to which they are much addicted. However, Montreal has been always an easy conquest to regular troops. The greater number of the inhabitants consists of persons of French extraction; all the eminent merchants, however, and the principal people of the town, are English, Scotch, Irish, or their descendants, all of whom pass for English with the French inhabitants. The French retain, in a great measure, the manners and customs, as well as the language, of their ancestors. The people of this town are, in general, remarkably hospitable and attentive to strangers; they are sociable among themselves, and extravagantly fond of convivial amusements.

The island of Montreal is about 28 miles in length, and 10 in breadth. Its soil is luxuriant, and in some parts much cultivated, and thickly inhabited. It is agreeably diversified with hill and dale, and towards its centre, in the vicinity of the town, there are two or three mountains. The base of the largest, at the distance of a mile, from which the town is named, is surrounded with neat country houses and



gardens: on the side towards the river is an old monastery, with extensive enclosures walled in; and the open park is covered with a rich verdure, and it is encircled by woods, among which persons may roam about for miles, shaded by the lofty trees from the rays of the sun. The wine from hence, says Mr. Weld, is good beyond description. A prodigious expanse of country is laid open to the eye, with the noble river St. Lawrence winding through it, which may be traced from the remotest part of the horizon, and which, flowing in, passes down the tremendous rapids above the town, when it is precipitated over huge rocks, with a noise that is heard even up the mountain. On the left below appears the town of Montreal, with its churches, monasteries, glittering spires, and the shipping under its old walls: several little islands in the river near the town, partly improved and partly overgrown with wood, add greatly to the beauty of the scene. La Prairie, with its large church on the distant side of the river, is seen to the greatest advantage, and beyond it is a range of lofty mountains, which terminates the prospect.

The trade chiefly carried on at Montreal is that of fur; and here the greatest quantity of the furs is shipped, which are sent from Canada to England. For an account of the fur trade, as it is carried on by the Hudson's Bay company, and by the N.W. company, see the article *FUR-trade*.

MONTREAL, a river which runs north-westward into lake Superior, in Upper Canada, on the southern side of the lake.

MONTREAL Bay, a bay that lies towards the E. end of lake Superior, having an island at the N.W. side of its entrance, and N.E. of Caribou island. N. lat.  $47^{\circ} 9'$ . W. long.  $84^{\circ} 50'$ .

MONTREAL Isle, a small island on the E. end of lake Superior, situated between the mouths of the rivers Montreal and Charrion, and near the shore.

MONTREDON, a town of France, in the department of the Tarn, and chief place of a canton, in the district of Castres. The place contains 4558, and the canton 5725 inhabitants, on a territory of 120 kilometres, in four communes.

MONTREJEAU, a town of France, in the department of the Upper Garonne, and chief place of a canton, in the district of St. Gaudens; 6 miles E. of St. Gaudens. The place contains 2515, and the canton 8788 inhabitants, on a territory of  $227\frac{1}{2}$  kilometres, in 16 communes.

MONTRE'SOR, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the district of Loches; 9 miles E. of Loches. The place contains 700, and the canton 8586 inhabitants, on a territory of 410 kilometres, in 12 communes.

MONTRET, a town of France, in the department of the Saône and Loire, and chief place of a canton, in the district of Louhans. The place contains 811, and the canton 5758 inhabitants, on a territory of 130 kilometres, in 9 communes.

MONTREVAULT, a town of France, in the department of the Maine and Loire, and chief place of a canton, in the district of Beaupré; 13 miles N.N.W. of Cholet. The place contains 492, and the canton 9373 inhabitants, on a territory of 190 kilometres, in 10 communes.

MONTREVEL, a town of France, in the department of the Ain, and chief place of a canton, in the district of Bourg; 8 miles N.N.W. of Bourg. The place contains 1242, and the canton 13,659 inhabitants, on a territory of  $192\frac{1}{2}$  kilometres, in 13 communes. N. lat.  $46^{\circ} 10'$ . E. long.  $5^{\circ} 13'$ .

MONTREUIL, a town of France, and principal place

of a district, in the department of the Straits of Calais, about six miles from the sea. This town is fortified, lies on an eminence, and contains several churches. The place includes 3534, and the canton 14,129 inhabitants, on a territory of 210 kilometres, in 25 communes. N. lat.  $50^{\circ} 28'$ . E. long.  $1^{\circ} 51'$ .

MONTREUIL-Bellay, a town of France, in the department of the Maine and Loire, and chief place of a canton, in the district of Saumur; 7 miles S. of Saumur. The place contains 1614, and the canton 10,811 inhabitants, on a territory of 240 kilometres, in 15 communes.

MONTREUIL-Bonnin, a town of France, in the department of the Vienne, in which was formerly a mint for coining money; 9 miles S.W. of Poitiers.

MONTRICHARD, a town of France, in the department of the Loire and Cher, and chief place of a canton, in the district of Blois; 15 miles S. of Blois. The place contains 1814, and the canton 10,836 inhabitants, on a territory of 245 kilometres, in 14 communes. N. lat.  $47^{\circ} 20'$ . E. long.  $1^{\circ} 16'$ .

MONTROSE, a royal borough and sea-port town, situated on the northern ocean, in the parish of Montrose, and county of Forfar, Scotland, is one of the first provincial towns of its size in that kingdom, or perhaps in the whole island. It consists of a fine spacious main street, with byelanes, the houses of which are in general well built, but, like the Flemish towns, have their gables turned towards the street. This place is more distinguished for its gaiety, and as the residence of persons of opulence and fashion, than for its commerce and industry. It has a theatre, monthly assemblies, and other places of amusement; and, during the last twenty years, has been remarkable for its well attended races. In the middle of the principal street stands the prison, formerly the old town-house. The new town-house is a neat edifice, having piazzas below, and rooms for public business above. The parish church, a large edifice of late erection, is finished with great elegance. The episcopal chapel, situated in the Links, to the eastward of the town, is a neat building; as is likewise the Lunatic hospital, erected in 1779, not only for the reception of lunatics, but also of indigent sick, or as a dispensary for the relief of out-patients. The public schools here are remarkable both for the accommodation they afford, and for the excellent mode of education adopted in them. In 1785 a public library was established by subscription, on a most liberal plan, which now contains several thousand volumes by the best authors. Many improvements have been made in this town within these few years; in particular, a handsome bridge has been thrown over each of the two rivers, the North and South Esk, which flow on either side of it. From the bridge over the South Esk a new street now extends to the middle of the main one, which was formed by cutting through a considerable hill, called the Fort-hill. The harbour of Montrose is very commodious, and capable of receiving ships of large burden; and there is, besides, a safe anchorage in the river, a little below the town. A considerable number of vessels belong to this port, most of them employed in the coasting and Baltic trade. There are here a dry and wet dock, for building and repairing ships. The principal manufactures are of linen yarn and thread, sheeting, and sail-cloth.

Montrose is governed by a provost, three bailies, a dean of guild, and a treasurer, assisted by thirteen counsellors. It unites with Aberdeen, Bervie, Brechin, and Arbroath, in electing a representative in the imperial parliament. The resident population here, according to the parliamentary returns of 1801, amounted to 7974 persons,



3380 males, and 4594 females; of which number, 382 were engaged in agriculture, and 1422 in different branches of trade and manufactures.

The river South Esk, immediately above the town, expands into a beautiful circular sheet of water, nearly three miles in diameter, called the *bafon* of Montrose. This *bafon* is perfectly dry at low water; but at high water, vessels of 60 tons can run up to its upper end without hazard. Valuable salmon fisheries are established on this river, as well as on the North Esk, and form a considerable branch of commerce with England. Beauties of Scotland. vol. iii.

MONT-ROTIER, a town of France, in the department of the Rhône and Loire; 15 miles W. of Lyons.

MONTROUES, a town on the west part of the island of St. Domingo, at the head of the bight of Leogane; 5 leagues S.E. of St. Mark.

MONTS, a town of France, in the department of the Vienne, and chief place of a canton, in the district of Loudun; 4 miles S.S.E. of Loudun. The place contains 689, and the canton 6185 inhabitants, on a territory of 277½ kilometres, in 15 communes.

MONT-SAINT-BERNARD. See *St. BERNARD*, Great.

MONT-SAINT-ELOY, a town of France, in the department of the Straits of Calais; 6 miles N.W. of Arras.

MONT-SAINT-JEAN, a town of France, in the department of the Côte-d'Or; 12 miles S. of Semur-en-Auxois.

MONT-SAINT-MICHEL, a town of France, in the department of the Channel, about six miles from the sea, with a castle upon a rock, about a quarter of a mile in circumference, in the midst of a sandy plain, covered by the sea twice in 24 hours; and as the sands are shifted by the waves, travellers are obliged to take guides for directing their course. Before the revolution, this castle was a Benedictine monastery, and the prior was governor of the town. It gave name to an order of knights, founded by Lewis XI.; 6 miles S.W. of Avranches. N. lat. 46° 36'. W. long. 1° 27'.

MONT-SAINT-VINCENT, a town of France, in the department of the Saône and Loire, and chief place of a canton, in the district of Chalons-sur-Saône. The place contains 700, and the canton 6446 inhabitants, on a territory of 227½ kilometres, in 12 communes.

MONTSALVY, a town of France, in the department of the Cantal, and chief place of a canton, in the district of Aurillac; 15 miles S. of Aurillac. The place contains 854,

and the canton 10,031 inhabitants, on a territory of 252½ kilometres, in 14 communes.

MONT-SAUCHE, a town of France, in the department of the Nièvre, and chief place of a canton, in the district of Chateau-Chinon; 11 miles N. of it. The place contains 1308, and the canton 11,117 inhabitants, on a territory of 437½ kilometres, in 10 communes.

MONTSEGUR, a town of France, in the department of the Gironde, and chief place of a canton, in the district of La Reole; 7 miles N.E. of La Reole. The place contains 1440, and the canton 7804 inhabitants, on a territory of 130 kilometres, in 15 communes.

MONT-SENI, a mountain of Spain, being a branch of the Pyrenæes, and the most lofty in Catalonia: its summit is always covered with snow.

MONTSERRAT, one of the Leeward Charaibean islands, in the West Indies; discovered at the same time with St. Christopher's, viz. in 1493, and deriving its name from a supposed resemblance which Columbus perceived in the face of the country to a mountain of the same name near Barcelona. This island, though named by the Spaniards, was planted by a small colony from St. Christopher's, detached in 1632 from the adventurers under Warner. The colony consisted chiefly of natives of Ireland, of the Romish persuasion: they were joined, soon after the first settlement, by many persons of the same country and religion, so that they thus created a white population, which it has ever since possessed, and which amounted, at the end of 16 years, according to Oldmixon's account, to upwards of 1000 white families, constituting a militia of 360 effective men. In 1712 Montserrat was invaded by a French force, and suffered so much, that an article was inserted in the treaty of Utrecht, for appointing commissioners to inquire into the damages; but these were never made good to the sufferers. It was again invaded in a subsequent war, and, with most of the other islands, captured by the French, and restored with the rest.

The island is about three leagues in length, and as many in breadth, and is supposed to contain about 30,000 acres of land, of which almost two-thirds are very mountainous or very barren.

The land in cultivation is appropriated nearly as follows. In sugar, 6000 acres; in cotton, provisions, and pasturage, 2000 each. None other of the tropical staples are raised. Its average crop, from 1784 to 1788, was 2737 hogheads of sugar of 1600 weight, 1107 puncheons of rum, and 275 bales of cotton. The exports of 1787, for Montserrat and Nevis, and their value at the London market, will appear in the following table:

Whither bound.	Shipping.			Sugar.		Rum.	Molasses.	Indigo.	Cotton.	Dyeing Woods, in Value.	Miscellaneous Articles, in Value.		Total.		
	No.	Tonnage.	Men.	Cwt.	qrs. lbs.	Gallons.	Gallons.	lbs.	lbs.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
To G. Britain	23	5,371	341	108,325	0 21	4,406	1,313	140	91,972	352 7 6	1,162 3 2	185,709 10 11			
Amer. States	20	1,850	138	1,895	0 0	122,710	—	—	—	—	70 10 0	13,981 12 6			
Brit. Col. in America	7	379	40	64	0 0	21,300	—	—	500	—	41 6 3	2,053 14 3			
Foreign W. Indies	71	3,085	377	—	—	140,660	—	—	—	—	89 4 0	12,396 19 0			
Africa	1	102	8	—	—	—	—	—	—	—	—	—			
Total	122	10,787	904	110,284	0 21	289,076	1,313	140	92,472	352 7 6	1,363 3 5	214,141 16 8			

The articles above enumerated are produced by the labour of 1300 whites, and almost 10,000 negroes.

The government is administered in this, as in the other islands, by a legislature of its own, under the captain general. The



The council consists of six members, and the assembly of eight, two from each of the four districts into which it is divided; and the proportion which Montserrat contributes to the salary of the captain general is 400*l. per annum*. N. lat. 16° 45'. W. long. 61° 6'. Edwards's History of the West Indies, vol. i.

**MONTSERRAT**, a mountain of Spain, in Catalonia, famous for its height and hermitage, to which pilgrims resort, to implore the protection of the Virgin before her miraculous image. The whole extent of this mountain is supposed to be about 24 miles in circumference, consisting chiefly of round lime-stone, firmly conglutinated with a yellow calcareous earth and sand, with a farther addition of round white quartz, streaked with red, as well as touch-stone, all cemented together, and forming one solid mass. In the course of time, however, torrents of rain have washed away the earth, formed by decomposition, and have split the mountain into clefts and precipices of the most grotesque and frightful figures; whilst other parts consist of immense rocks, bare and blanchied, in form of cones, pillars, and jagged fragments, apparently scaled upon one another to the height of upwards of 3000 feet above the level of the sea. On the summit of this lofty mountain the prospect is extensive and splendid. The lower part of the mountain, having been decomposed sooner than the upper parts, and converted into soil, produces corn, vines, and olives; while the shelving rocks facilitate a passage to the summit, and exhibit to the curious botanist above 200 sorts of trees, shrubs, and plants, that seem to shoot up spontaneously. The direction of this mountain is from east to west, rather visibly inclining to the west; 20 miles N.W. of Barcelona.

**MONTSERRATE**, a town of Brasil, in the government of St. Paul; 35 miles N.W. of St. Paul.

**MONTOLS**, a town of France, in the department of the Rhône, and chief place of a canton, in the district of Villefranche; 15 miles N. of it. The place contains 1232, and the canton 10,126 inhabitants, on a territory of 200 kilometres, in 12 communes.

**MONT-SURS**, a town of France, in the department of the Mayenne, and chief place of a canton, in the district of Laval; 9 miles E.N.E. of Laval. The place contains 1100, and the canton 6803 inhabitants, on a territory of 195 kilometres, in 10 communes.

**MONT-TONNERRE**, one of the thirteen departments of the region of France, called the Re-united Country, formerly a portion of the electorate of Mayence, of Hunsrück, of the Palatinate, of the bishopric of Spire, and of the duchy of Deux-Ponts, separated from Germany on the north and east by the Rhine, in N. lat. 49° 35'. This department contains 6015 kilometres, or 277 square leagues, and 342,316 inhabitants. It is divided into 4 districts or circles, 37 cantons, and 685 communes. Its circles are Mayence, including 114,648 inhabitants; Spire, 121,965; Kaiferlautern, 50,135; and Deux-Ponts, 55,568. Its capital is Mayence. Its contributions, in the year 11, were 3,468,473 francs, and its expences 304,100 francs. This department is hilly, but abundantly fertile in grain, wine, tobacco, timber, and excellent pastures. In the circle of Kaiferlautern are mines of antimony, cobalt, sulphur, mercury, coal, &c.

**MONTUCLA**, JOHN STEPHEN, in *Biography*, a celebrated mathematician, was born at Lyons in the year 1725. His father wished to bring him up to trade, in which he himself was engaged; but the youth gave early indications of a love of learning, and was placed under the instructions of the Jesuits, who carefully cultivated his opening genius. In their seminary he acquired an intimate acquaintance with

the ancient and modern languages, and made a considerable progress in the mathematics. When he left the Jesuits' college, at the age of sixteen, having lost both his parents, he went to Toulouse to study the law, and was, in due time, admitted an advocate, though without much intention of practising at the bar. Having completed his studies, he went to Paris, cultivated an acquaintance with the most distinguished literary characters, and attended all the meetings at which scientific men were accustomed to meet, to promote the interests of knowledge. At these meetings he formed an intimacy with Diderot, d'Alembert, and other learned men; and it was owing to his intercourse with them, that he was stimulated to the grand undertaking for which his name is rendered illustrious, viz. his "History of the Mathematical Sciences."

Before he engaged in the actual composition of this great work, he employed himself in giving new editions, with additions and improvements, of several mathematical treatises, which were already held in the highest estimation. The first of these was "Mathematical Recreations," by M. Ozanam, which has been since translated into English, and published in London, in 4 vols. 8vo. To all the works which he edited, after Ozanam's, he gave the initials of his name. While thus occupied, he contributed his assistance for some years to "The French Gazette;" and in 1755 he was elected a member of the Royal Academy of Sciences at Berlin. In the following year, when the experiment of inoculation was about to be tried on the first prince of the blood, Montucla translated from the English an account of all the recent cases of that practice, which had been sent from Constantinople, by lady Mary Wortley Montagu. This translation he added to the memoir of De la Condamine on the subject. Previously to this publication, he had given to the world his "History of Inquiries relative to the Quadrature of the Circle." The encouragement which this met with from very able judges of its merit, afforded him great encouragement to apply with ardour to his grand design, "The History of the Mathematics." The task he proposed to himself was comprehensive and laborious. "He had to trace the progress of the human mind from age to age, and nation to nation; from one transcendent genius to another; to mark the gradual development of important truths, and their dependence on each other; to pass in review all the celebrated characters who have adorned the annals of science, to appreciate their merits, to compare their respective pretensions, and to refer discoveries to their real authors; to illustrate the nicest theories, the most profound systems, and the most abstract analyses; to extract materials from an indefinite number of books, in almost all languages, ancient and modern; and to amalgamate the whole into a narrative style, which should, if possible, interest the reader by its historic form, and insensibly initiate him into all the mysteries of the mathematics."

In the year 1758 he published his "History," in two volumes, 4to., which terminates with the close of the 17th century. It answered the expectations of all his friends, and of men of science in all countries, and the author was instantly elevated to a high rank in the learned world. His fame was widely diffused, and he was pressed from all quarters to proceed with the mathematical history of the 18th century, which he had announced for the subject of a third volume, and for which he had made considerable preparations; but he was diverted from his design, by receiving the appointment of secretary to the Intendance at Grenoble. Here he spent his leisure hours chiefly in retirement, and in scientific pursuits. In 1764, Turgot, being appointed to establish a colony at Cayenne, took Montucla with him as

his



his "secretary," to which was added the title of "astronomer to the king." In about fifteen months he returned, without attaining any particular object with regard to the astronomical observations, for which he went out; but the voyage afforded him the opportunity of collecting some valuable tropical plants, with which he enriched the king's hot-houses at Versailles. Soon after his return, he was appointed chief clerk in an official department, similar to that known in this country by the name of the "Board of Works." To the immediate business of the appointment he devoted himself most assiduously for the space of 25 years, till the place itself was abolished in 1792. During this long period, his progress in the "History of Mathematics" was exceedingly slow; but he was continually rising in the esteem of the learned world, and was offered a seat in the Royal Academy of Sciences, which he declined, from a persuasion that the duties of his business would not allow him sufficient leisure for filling it in a proper manner. By the revolution in 1789 he was, as we have seen, deprived of his office, and reduced to considerable pecuniary embarrassments. Under the pressure of these circumstances, he began to prepare a new and much enlarged edition of his "History," which he presented to the world in 1799, in two volumes, 4to. In this edition are many important improvements; and many facts, which were barely announced in the former impression, are largely detailed and illustrated in this. After the publication of these two volumes, the author proceeded with the printing of the third; but death terminated his labours, when he had arrived at the 336th page. The remainder of the volume, and the whole of the fourth, were printed under the inspection of Lalande. Montucla had been a member of the National Institute from its original establishment. He had obtained various employments under the revolutionary government, though he was but meanly paid for his labour, and had to struggle with many difficulties to furnish his family with the bare necessities of life. At length he was reduced to seek the scanty means of support by keeping a lottery-office, till the death of Saussure put him in the possession of a pension of about 100*l.* per annum, which he enjoyed only four months. He died in December 1799, in the 75th year of his age. He was, says his biographer, "modest to a degree, which, when his exalted merits are considered, cannot but excite our admiration; and he was distinguished by acts of generosity and liberality, which will appear equally extraordinary, when the smallness of his means is recollected. He was a warm friend, a lively cheerful companion, and his manners and behaviour were simple, innocent, and virtuous." See Hist. of the Mathematics, vol. iv.

**MONTVILLE**, in *Geography*, a township of America, in New London county, Connecticut, about 10 miles N. of New London; containing 2231 inhabitants.

**MONTUOSA**, a small island in the Pacific ocean, near the coast of Mexico. N. lat.  $8^{\circ} 15'$ . W. long.  $83^{\circ} 36'$ .

**MONTUYRI**, a very ancient town of the island of Majorca, which has a parish church and a bailiff royal. Its vicinity affords neither well nor fountain, so that the inhabitants are obliged to procure water from wells and cisterns. The land produces corn, wine, and pasture for cattle.

**MONTWILISZKI**, a town of Samogitia; 14 miles E.S.E. of Rostenne.

**MONTZBURG**, a town of Saxony, in the margravate of Meissen; 9 miles N. of Dresden.

**MONTZEN**, a town of the duchy of Limburg; 7 miles N. of Limburg.

**MONUMENT**, an edifice raised to preserve the memory

of some eminent person, or destined to perpetuate some remarkable event.

Monuments were at first made of stones erected over the tombs of the deceased, on which were engraved the names and frequently the actions of the person to whose memory they were reared.

Monuments received different names among the ancients, according to their figure. When the base was square, and the solid erected thereon a prism, the monument was called *stelæ*; whence square pilasters or attic columns are supposed to be derived. When the base was circular, and the solid erected thereon a cone, the monument was called *stylos*. Those monuments that were square at the foot, and tapering therefrom in planes to a point in which the planes ended, were called *pyramids*. Others which had triangular bases, and their sides ending in a point, were called *obelisks*, being constructed in imitation of the instruments or spits used in roasting sacrifice.

**MONUMENT**, *The*, absolutely so called among us, denotes a magnificent pillar, designed by sir Christopher Wren, erected by order of parliament, in memory of the burning of the city of London, anno 1666, in the very place where the fire began.

This pillar was begun in 1671, and finished in 1677.

It is of the Doric order, fluted, 202 feet high from the ground, and fifteen feet in diameter, of solid Portland stone, with a stair-case in the middle of black marble, containing 345 steps. The lowest part of the pedestal is 28 feet square, and its altitude 40 feet; the front being enriched with curious basso relievos. It has a balcony within 32 feet of the top, where is a curious and spacious blazing urn of gilt brass.

**MONUMENT Bay**, in *Geography*, a bay of America, on the E. coast of Massachusetts, formed by the bending of Cape Cod: it is spacious and convenient for the protection of shipping. The cape in this bay is called "Monument Point." N. lat.  $41^{\circ} 55'$ . W. long.  $70^{\circ} 31'$ .

**MONUMENT Island**, one of the New Hebrides, which appeared to be a rock of a pyramidal form, accessible only to birds; N. of Montague island.

**MONUSCAT**, a town of Curdistan; 50 miles W. of Betlis.

**MONYCHA**, formed of *μονος*, *single*, and *ουζ*, *hoof*, an epithet applied by naturalists to those animals whose hoofs are single and undivided; such are the horse and the like.

**MONZA**, IL CAVALIERE, in *Biography*, a judicious and excellent opera composer, in the service of the court at Milan in 1770. A mass in music of his composition, which we heard performed at a church in that city, excited hope and expectation that he would soon be ranked among composers of the first class: and we were not disappointed; for in 1777 he composed two operas for Venice, "Nitetti," and "Cajo Majo," which established his reputation.

The first air which Pacchierotti sung on our stage in the pasticcio opera of "Demofonte," was "Misero pergoletto," by Monza, a capital production, in which the composition was masterly, the melody touching, the accompaniments clear and full of effects in painting parental affection and distress, and the motive and general conduct of the air grand and judicious.

The late Mrs. Sheridan was so much struck with this composition, that she eagerly sought and procured all the productions of Monza that could be found.

**MONZA**, in *Geography*, a town of Italy, in the department of the Olona, on the river Lambro, chiefly deserving notice on account of the treasury of John the Baptist, where, among



among other articles, is the iron crown with which the ancient Italian kings, and afterwards the emperors of Germany, were crowned, whenever they asserted their rights as kings of Lombardy. It takes this name from an iron ring within it, though the crown itself is of gold and enriched with jewels. Charlemagne was crowned here in 774, after taking prisoner Desiderius, king of Lombardy; 8 miles N.N.E. of Milan.

MONZAMBANO, a town of Italy, in the department of the Mincio; 14 miles N.N.W. of Mantua.

MONZE, CAPE, a cape on the coast of Sindy, W. of the Indus. N. lat.  $24^{\circ} 45'$ . E. long  $65^{\circ} 46'$ .

MONZINGEN, a town of France, in the department of the Rhine and Moselle; 42 miles E. of Treves. N. lat.  $49^{\circ} 48'$ . E. long.  $7^{\circ} 32'$ .

MONZKUGUTH, a district of Pomerania, forming a peninsula in the S.E. part of the island of Rugen.

MOO, a town of Sweden, in West Gothland; 26 miles N.N.W. of Uddevalla.—Also, a town of Sweden, in West Bothnia; 30 miles N.W. of Tornea.

Moo Ong, a small island in the East Indian sea, near the W. coast of the island of Nassau. S. lat.  $2^{\circ} 58'$ . E. long.  $99^{\circ} 49'$ .

MOOBAD, a town of Hindoostan, in Oude; 12 miles W. of Lucknow.

MOOD, or MODE, in *Logic*, called also *Syllogistic Mood*, is a proper disposition of the several propositions of a syllogism in respect of quantity and quality.

By proper disposition, we mean such in which the antecedent being true, the consequent, in virtue of the form, cannot be false. So that all those moods or manners of syllogism are at once excluded, where no conclusion formally follows; or where the antecedent being true, a false conclusion may be drawn from it.

There are two kinds of moods; the one *direct*, the other *indirect*.

Mood, *Direct*, is that in which the conclusion is drawn from the premises directly and immediately: as, every animal is a living thing: every man is an animal; therefore every man is a living thing.

Mood, *Indirect*, is that in which the conclusion is not inferred immediately from the premises, but follows from them by means of a conversion: as, every animal is a living thing; every man is an animal; therefore some living thing is a man. There are fourteen direct moods; of which four belong to the first figure; four to the second; and six to the third. See *FIGURE*.

They are denoted by so many artificial words framed for that purpose: *viz.* 1. Barbara, celarent, darii, ferioque. 4. Baralip, calentes, dibatis, fespamo, fresfom. 2. Cesare, camestres, festino, baroco. 3. Darapti, felapton, disamis, datisi, bocardo, ferison.

The use and effect of which words lie wholly in the syllables and the letters of which the syllables consist. Each word, *e. gr.* consists of three syllables, denoting the three propositions of a syllogism; *viz.* major, minor, and conclusion. Add, that the letters of each syllable are either vowels or consonants: the vowels are *a*, which denotes an universal affirmative proposition; *e*, an universal negative; *i*, a particular affirmative, and *o*, a particular negative.

Thus, barbara is a syllogism or mood of the first figure, consisting of three universal affirmative propositions: baralip, of the fourth figure, consisting of two universal affirmative premises, and a particular affirmative conclusion. The consonants are chiefly of use in the reduction of syllogisms.

MOOD, or *Mode*, in *Grammar*, is used to signify the different manners of conjugating verbs, agreeably to the different actions or affections to be expressed; as shewing, commanding, wishing, &c.

Hence arise five moods; *viz.* the *indicative*, *imperative*, *optative*, *subjunctive*, and *infinitive*; which see.

Some grammarians reckon but four moods, confounding the optative with the subjunctive; and some make six, dividing the optative into potential and optative.

The Greek have five moods of verbs different in termination; but the Latins have only four. In English the terminations are the same in all the moods.

With respect to the origin of moods, it may be observed, that verbs are of that kind of words which signify the manner and form of our thought: of which the principal is affirmation. Verbs are also formed to receive different inflexions, as the affirmation regards different persons and different times: whence arise the tenses and persons of verbs. See *VERB*.

But, besides these, men have thought fit to invent other inflexions, to explain what passes in their minds still more distinctly: for, in the first place, they considered, that besides the simple affirmations, as *he loves, he loved*; there were others modified and conditional, as *if he loved, though he should love*: and the better to distinguish these affirmations from the others, they doubled the inflexions of those tenses or times; making some serve for simple affirmations, as, *I love, he loved*; and reserving the rest for affirmations that were modified, as, *if he should love, might he have loved*. Yet they kept not steadily to their rules; but sometimes made use of simple inflexions to express affirmations that were modified: as, *etsi veroco*, for *etsi verocar*. And it is from this kind of inflexion, that grammarians have formed the mood they call *subjunctive*.

But farther, besides the affirmation, the action of our will may be taken for a mood, or manner of our thought; and men have found themselves under a necessity of expressing what they *will*, as well as what they *think*. Now we may will a thing in several manners; of which there are three that may be considered as the principal. First, then, we sometimes will things which do not depend on ourselves; and in that case we only will them by a bare wish, which the Latins express by the article *utinam*; and we by *please God*. Some languages, for instance the Greek, have invented particular inflexions for this end; whence the grammarians have taken occasion to call this the *optative* mood: and there seems something like it in the French, Italian, and Spanish tongues, as these have a kind of triple tenses; but in Latin, English, &c. the same inflexions serve for the subjunctive, and for the optative. For this reason, one may very well retrench this mood from the Latin conjugations; because they are the different inflexions that make moods, not the different manners of signifying, which may be varied to infinity.

We sometimes will in another manner: as when we are content a thing should come to pass, though we do not absolutely desire it; as when Terence says, *profundat, perdat, preat, let him spend, sink, perish*. Men might have invented a particular inflexion to express this movement, as in Greek they have done to express a simple desire: but they have not done it; and, in lieu of it, they make use of the subjunctive. In English, we add the particle *let*, let him spend, &c. Authors call this the *potential*, or *concessive* mood.

The third manner of willing is, when what we desire depends on another person, of whom we can obtain it, and we signify our will that he do it. This is the motion we use, when we command or pray; and to express this motion, was invented



invented the mood we call *imperative*; which has no first person in the singular, because a man, properly speaking, cannot command himself; in some languages it has no third person, because, in strictness, a man cannot command any person, but him to whom he speaks and addresses himself. And because the command or prayer always relates to what is to come, it happens that the imperative mood, and the future tense, are frequently used for each other (especially in the Hebrew); as, *non occides, thou shalt not kill, for do not kill*. Hence some grammarians place the imperative among the number of futures.

Of all the moods we have mentioned, the oriental languages have none but the last, which is the imperative; and, on the contrary, none of the modern languages have any particular inflexion for the imperative. The method we take for it in English, is either to omit the pronoun, or transpose it: thus, I love, is a simple affirmation; love, an imperative; we love, an affirmation; love we, an imperative. An infinitive verb is sometimes used by the poets to express a command; the imperative verb being understood.

In explaining the origin of moods, the ingenious Mr. Harris observes, that the soul's leading powers are those of perception and volition; and that all speech or discourse is a publishing either a certain perception or volition. Hence then, according as we exhibit it either in a different part, or after a different manner, the variety of moods. If we simply declare or indicate something to be, or not to be, whether a perception or volition, this constitutes the *declarative* or *indicative* mood. If we assert of something possible only, and in the number of contingents, this makes the *potential* mood. When this is subjoined to the indicative, and used, as it mostly is, to denote the end or final cause, it is the *subjunctive*. When we address others, in order to have some perception informed, or some volition gratified, we form new modes of speaking: if we interrogate, it is the *interrogative* mood: if we require, it is the *requisitive*, which, with respect to inferiors, is *imperative*; and, with respect to equals and superiors, *precativ*e or *optative*. The indicative, potential, interrogative, and requisitive moods, have their foundation in nature; and, therefore, certain marks or signs of them have been introduced into language, that we may be enabled by our discourse to signify them to one another; so that moods are, in fact, no more than so many literal forms, intended to express these natural distinctions. All these moods, with their respective tenses, the verb being considered as denoting an attribute, have always reference to some person or substance. But there is another mood or form, under which verbs sometimes appear, where they have no reference at all to persons or substances: these, from their indefinite nature, are called *infinitives*. Hermes, p. 140, &c.

MOOD, or *Mode*, in our old *Mus*ic, was a term only applied to the divisions of time or measure, which was so embarrassing a study, that a very considerable portion of Morley's treatise is bestowed on that subject. Previous to the use of bars, all measures, however complicated, were determined by the modal signs placed after the clef of every composition. These signs were circles, semicircles, pointed, or without points, followed by the figures 2 or 3 differently combined. See *MODE*, *MODAL*, and *PROLATION*.

Rousseau gives twelve examples of ancient characters of quantity; but as these were characters referred to notes now out of use, as the *maxima*, the *long*, and the *breve*, these explanations can be of little consequence but to those who are ambitious of knowing the state of measured music at every period of its cultivation.

MOON, in *Philosophy* and *Mus*ic. See *MODE*.

MOODUL, in *Geography*, a town of Hindoostan, in Vissapour; 13 miles S.S.W. of Galgala.

MOODYPOUR, a town of Hindoostan, in Bengal; 28 miles N. of Pucculoe.

MOOGONG, a town of Hindoostan, in Goondwanah; 50 miles N. of Nagpour.

MOOGPOUR, a town of Hindoostan, in Guzerat; 31 miles E.N.E. of Janagur.

MOOGRY, a town of Hindoostan, in Vissapour; 31 miles W. of Poonah.

MOOKANOOR, a town of Hindoostan, in Baramaul; 18 miles S.S.W. of Darempoor.

MOOKER, a town of Cabulistan; 40 miles from Ghizni. — Also, a town of Hindoostan, in Madura; 40 miles E. of Coilpetta.

MOOKI, a sea-port town of Japan, in a bay on the S.E. coast of the island of Nippon; 80 miles S.E. of Jedo. N. lat. 35° 30'. E. long. 40° 40'.

MOOLA, a town of Hindoostan, in Vissapour; 10 miles E. of Poonah.

MOOLILLY, a town of Hindoostan, in Myfore; 20 miles W.N.W. of Allumbaddy.

MOON, LUNA, ☾, in *Astronomy*, one of the heavenly bodies belonging to that class of planets, accounted satellites or secondary planets.

The moon is an attendant of our earth, which she respects as a centre, and in whose neighbourhood she is constantly found; inasmuch as, if viewed from the sun, she would never appear to depart from us by an angle greater than ten minutes.

As all the other planets move primarily round the sun, so does the moon round the earth: her orbit is an ellipsis, in which she is retained by the force of gravity; performing her revolution round the earth, from change to change, in 29 days, 12 hours, 44 minutes, and round the sun with it every year; she goes round her orbit in 27 days, 7 hours, 43 minutes, 5 seconds, moving about 2290 miles every hour; and turns round her axis in the time that she goes round the earth, which is the reason of her keeping always the same side towards us; and that her day and night taken together are as long as our lunar month. See *LIBRATION of the Moon*.

The mean distance of the moon from the earth is 60½ semi-diameters of the earth; which is equivalent to 240,000 miles.

The diameter of the earth is to that of the moon as 11 : 3, or as 1 : 0.2727 (see *PARALLAX*); therefore, the magnitude of the earth is to that of the moon as 1 : 0.02028, or very nearly as 49 : 1; and the density of the moon being to that of the sun as 2.44 : 1, and the density of the sun being to that of the earth as 0.252 : 1, it follows that the density of the earth is to that of the moon as 1 : 0.6149; therefore, the quantity of matter in the earth is to that of the moon as 1 : 0.1245. But if, with some authors, we assume the density of the moon to that of the sun as 2.5 : 1, the quantity of matter in the earth is to that in the moon as 78 : 1, or 1 : 0.128. Also, the gravity of a body upon the earth is to that upon the moon as 1 : 0.1677. The apparent diameter of the moon, as seen from the earth, varies, according to M. de la Lande, from 29' 22" when the moon is in apogee and conjunction, to 33' 31" when in perigee and opposition: its mean diameter being nearly equal to the least apparent diameter of the sun, it may be taken at 31' 8", and that of the sun at 32' 2". M. de la Lande makes it to be 31' 26". (See *DECLINATION and DIAMETER*.) Its mean diameter, as seen from the sun, is 4".6. The mean diameter, in English miles, is 2180. The mean diameter,



as above stated from M. de la Lande, is the arithmetic mean between the greatest and least diameters: the diameter at the mean distance is  $31' 7''$ . When the moon is at different altitudes above the horizon, it is at different distances from the spectator, and, therefore, there is a change of the apparent diameter; which is inversely as the moon's distance. The diameter of the moon may be measured, at the time of its full, by a micrometer; or it may be measured by the time of its passing over the vertical wire of a transit telescope, which must be done when the moon passes within an hour or two of the time of the full, before the visible disc is sensibly changed from a circle. The moon's surface contains 14,808,750 square miles, and its solidity 5,408,246,000 cubical miles. The mean eccentricity of the moon's orbit is 0.05503568 of her mean distance, which is equal to about 13,200 miles; and this makes a considerable variation in that mean distance. This eccentricity, however, is subject to a variation, the greatest variation from the mean being 0.00986; the eccentricity being increased whilst the apses move from quadratures to syzygies, and decreased whilst they move from syzygies to quadratures. (See the annexed table.) The corresponding greatest equation is  $6^\circ 18' 31''.6$ , which Mayer makes to be  $6^\circ 18' 32''$  in his last Tables, published by Mr. Mafon, under the direction of Dr. Maskelyne. The inclination of the moon's orbit is also subject to a variation. When the moon is in syzygies, the variation ( $= 2' 40''.7$ ) is the diminution of the inclination in the transit of the moon from the nodes (in quadratures) to syzygies; the half of which ( $1' 20''$ ) is the variation from the mean inclination in that time. Hence, in the transit of the nodes from syzygies to quadratures, when the moon is in quadratures, the variation of the inclination has been  $16' 10'' - 1' 20'' = 14' 50''$ , and when the moon is in syzygies, the variation has been  $16' 10'' + 1' 20'' = 17' 30''$ ; therefore, if the inclination be  $5^\circ 17' 20''$ , when the nodes are in syzygies, the least inclination becomes  $4^\circ 59' 50''$ , and the mean  $= 5^\circ 8' 35''$ .

In order to determine the inclination of the moon's orbit to the plane of the ecliptic, observe the moon's right ascension and declination when it is  $90^\circ$  from its nodes, and thence compute its latitude; which will be the inclination at that time. Repeat this observation for every distance of the sun from the earth, and for every position of the sun in respect to the moon's nodes, and the inclination at those times will be thus found. Hence it will appear, that the inclination of the orbit to the ecliptic is variable, as we have already stated, the least inclination occurring when the nodes are in quadratures, and the greatest when they are in syzygies. This inclination partly depends upon the sun's distance from the earth. As the axis of the moon is nearly perpendicular to the plane of the ecliptic, this planet has scarcely any difference of seasons. The place of the moon's nodes may be determined in the manner stated under *Nodes*; which see. To determine the mean motion of the nodes, find the place of the nodes at different times, and thus will be obtained their motion in the interval; and the greater this interval, the more accurate will be the result.

The mean motion of the moon is found by observing its place at two different times, and thus we obtain the mean motion in that interval, supposing that the moon has had the same situation in respect to its apses at each observation; if not, provided there be a great interval of the time, it will be sufficiently exact. For determining this, we must compare together the moon's places, first at a small interval of time from each other, in order to get nearly the mean time of a revolution; and then at a greater interval, in order to obtain it more exactly. The moon's place may be

determined directly from observation, or deduced from an eclipse. The mean time of a revolution of the moon was found from eclipses at a distant interval to be  $27^d 7^h 43' 5''$ , which may be considered as very exact. Hence, the mean diurnal motion is  $13^\circ 10' 35''$ , and the mean hourly motion  $32' 56' 27''\frac{1}{2}$ . M. de la Lande makes the mean diurnal motion  $13^\circ 10' 35''.02784394$ . This is the mean time of a revolution in respect to the equinoxes. But, as the precession of the equinoxes is  $50''.25$  in a year, or about  $4''$  in a month, the mean revolution of the moon in respect to the fixed stars must be greater than that in respect to the equinox, by the time which the moon takes to describe  $4''$  with its mean motion, i. e. about  $7'$ . Hence the time of a sidereal revolution of the moon is  $27^d 7^h 43' 12''$ .

The mean horary motion of the nodes of the moon's orbit in one synodic revolution is equal to half their horary motion when the moon is in syzygies, whatever be the position of the nodes. When the nodes are in quadratures and the moon is in syzygies, their horary motion is  $32' 42'' 7'''$ ; hence the mean horary motion of the nodes when in quadratures is  $16' 21' 3\frac{1}{2}'''$ , in an elliptic orbit, and in a circular orbit  $16' 35'' 16''' 36''''$ . The mean annual regression of the nodes is  $19^\circ 23'$ . Allowing for the inclination of the orbit, this motion will be about  $4'$  less; and we may, therefore, suppose the mean annual motion to be  $19^\circ 19'$ . Mayer makes the mean annual motion of the nodes to be  $12^\circ 19' 43''.1$ . The motion of the nodes is not affected by the eccentricity of the orbit, as Sir Isaac Newton supposed.

The motion of the apogee in one mean periodic revolution of the moon is  $3^\circ 2' 32''.3916$ ; hence,  $27^d 7^h 43' : 365^d 6^h 9' :: 3^\circ 2' 32''.3916 : 40^\circ 40' 20''$  the mean progressive motion of the apogee in a year. According to Mayer's Tables, it is  $40^\circ 41' 33''$ .

To determine the mean motion of the apogee, find its place at different times, and compare the difference of the places with the interval of the time that had elapsed between them. For this purpose, compare, first, observations at a small distance from each other, in order to prevent being deceived in a whole revolution, and then we may compare those at a greater distance. The mean annual motion of the apogee in a year of 365 days, is thus found to be  $40^\circ 39' 50''$ , according to Mayer. Horrox, long ago, from observing the diameter of the moon, found the apogee subject to an annual equation of  $12.5$ . The following table shews the times of the revolutions of the moon, of its apogee and nodes, as determined by M. de la Lande.

Tropical revolution	-	-	27 <sup>d</sup> 7 <sup>h</sup> 43' 4".6795
Sidereal revolution	-	-	27 7 43 11.5259
Synodic revolution	-	-	29 12 44 2.8283
Anomalistic revolution	-	-	27 13 18 33.9499
Revolution in respect to the node	-	-	27 5 5 35.603
Tropical revolution of the apogee	-	-	8 <sup>y</sup> 311 8 34 57.6177
Sidereal revolution of the apogee	-	-	8 312 11 11 39.4089
Tropical revolution of the node	-	-	18 228 4 52 52.0296
Sidereal revolution of the node	-	-	18 223 7 13 17.744
Diurnal motion of the moon in respect to the equinox	-	-	13 <sup>o</sup> 10' 35''.02784394
Diurnal motion of the apogee	-	-	0 6 41.069815195
Diurnal motion of the node	-	-	0 3 10.638603696

The years here taken are the common years of 365 days.

A TABLE



# MOON.

A TABLE of the great Equation of the Moon's Apogee, and of the Excentricity of its Orbit.

Sig. O. VI. +			Sig. I. VII. +		Sig. II. VIII. +		
Ann. Arg.	Equation of D's Apogee.	Excentricity of the Moon's Orbit.	Equation of D's Apogee.	Excentricity of the Moon's Orbit.	Equation of D's Apogee.	Excentricity of the Moon's Orbit.	Ann. Arg.
Deg.	D. M. S.		D. M. S.		D. M. S.		Deg.
0	0 0 0	.066777	9 27 57	.061754	11 40 0	.050224	30
1	0 21 4	.066771	9 42 12	.061434	11 30 39	.049838	29
2	0 42 8	.066754	9 55 58	.061107	11 20 14	.049457	28
3	1 3 10	.066724	10 9 14	.060772	11 8 44	.049082	27
4	1 24 9	.066683	10 21 58	.060429	10 56 8	.048714	26
5	1 45 5	.066630	10 34 9	.060080	10 42 26	.048354	25
6	2 5 57	.066566	10 45 47	.059725	10 27 38	.048001	24
7	2 26 44	.066489	10 56 49	.059363	10 11 45	.047656	23
8	2 47 25	.066402	11 7 15	.058995	9 54 47	.047321	22
9	3 8 0	.066302	11 17 4	.058621	9 36 44	.046995	21
10	3 28 27	.066192	11 26 14	.058243	9 17 37	.046679	20
11	3 48 46	.066070	11 34 43	.057860	8 57 25	.046374	19
12	4 8 55	.065936	11 42 31	.057472	8 36 11	.046081	18
13	4 28 54	.065792	11 49 36	.057080	8 13 56	.045800	17
14	4 48 42	.065636	11 55 57	.056684	7 50 42	.045531	16
15	5 8 19	.065469	12 1 33	.056285	7 26 29	.045275	15
16	5 27 43	.065292	12 6 22	.055884	7 1 21	.045033	14
17	5 46 53	.065103	12 10 23	.055479	6 35 19	.044805	13
18	6 5 48	.064905	12 13 35	.055073	6 8 26	.044592	12
19	6 24 27	.064695	12 15 56	.054666	5 40 45	.044394	11
20	6 42 50	.064476	12 17 24	.054257	5 12 18	.044212	10
21	7 0 56	.064246	12 17 59	.053848	4 43 10	.044046	9
22	7 18 44	.064006	12 17 40	.053438	4 13 23	.043896	8
23	7 36 12	.063757	12 16 25	.053030	3 43 1	.043763	7
24	7 53 20	.063498	12 14 13	.052622	3 12 9	.043647	6
25	8 10 6	.063230	12 11 2	.052215	2 40 49	.043548	5
26	8 26 29	.062952	12 6 52	.051811	2 9 7	.043467	4
27	8 42 29	.062665	12 1 42	.051409	1 37 6	.043404	3
28	8 58 5	.062370	11 55 31	.051010	1 4 52	.043359	2
29	9 13 15	.062066	11 48 17	.050615	0 32 28	.043332	1
30	9 27 57	.061754	11 40 0	.050224	0 0 0	.043323	0
Sig. V. XI. —			Sig. IV. X. —		Sig. III. IX. —		

N B. The preceding table is taken from Dr. Halley's "Astronomical Tables;" the argument, called the "annual argument," is the distance of the sun from the mean place of the apogee corrected by its annual equation.

The full moon appears to the naked eye broader than a circular object subtending an equal angle seen by perfect vision. In a moon of three or four days old, the illuminated part appears too broad, in proportion to the obscure part, and likewise seems to extend more outwards, or to have a greater diameter than the obscure part. Also, in an eclipse of the sun or moon, the bright part appears too broad in proportion to the dark part, and the eclipse appears less than it really is.

This observation was made by Horrox, and is accounted for by Dr. Jurin, in his Essay upon distinct and indistinct Vision. Appendix to Smith's Optics. See *Phases of the Moon*.

*Moon, Phenomena of the.* The different appearances of the moon are very numerous; sometimes she is increasing, then waning; sometimes horned, then semicircular; sometimes gibbous, then full and round.

Sometimes, again, she illumines us the whole night; sometimes only a part of it; sometimes she is found in the southern hemisphere, sometimes in the northern; all which variations having been first observed by Endymion, an ancient Grecian, who watched her motions, she was fabled to have fallen in love with him.

The source of most of these appearances is, that the moon is a dark, opaque, and spherical body, and only shines with the light she receives from the sun; whence only that half turned towards him, at any instant, can be illuminated, the opposite half remaining in its native darkness. The face of the moon visible on our earth, is that part of her body turned towards the earth; whence according to the various positions of the moon with regard to the sun and earth, we observe different degrees of illumination; sometimes a large, and sometimes a less portion of the enlightened surface being visible.

If we look at the moon with an ordinary telescope, we shall perceive that her surface is diversified with long tracts of mountains and cavities; this ruggedness of the moon's surface is of great use to us, by reflecting the sun's light to all sides; for if the moon were smooth and polished like a looking-glass, or covered with water, she could never distribute the sun's light all round; only in some positions she would shew us his image, no bigger than a point, but with such a lustre as would be hurtful to our eyes. The moon's surface being so uneven, many have been surprised that her edge should not appear jagged, as well as the curve bounding the light and dark places. But if we consider, that what we call the edge of the moon's disc, is not a single line set round with mountains, in which case it would appear irregularly indented, but a large zone, having many mountains lying behind one another from the observer's eye, we shall find that the mountains in some rows will be opposite to the vales in others; and so fill up the inequalities as to make her appear quite round;—just as when one looks at an orange, although its roughness be very discernible on the side next the eye, especially if the sun or a candle shines obliquely on that side, yet the line terminating the visible part still appears smooth and even. If the moon have no atmosphere, the lunar inhabitants must have an immediate transition from the brightest sunshine to the blackest darkness; and thus must be totally destitute of the benefit of twilight. See the sequel of this article.

*Moon, Phases of the.* To conceive the lunar phases, let S (Plate XVII. *Astronomy*, fig. 5.) represent the sun, T the earth, R T S a portion of the earth's orbit, and A B C D E F G the orbit of the moon, in which she revolves round the earth in the space of a month, advancing from west to east: connect the centres of the sun and moon

by the right line S L, and through the centre of the moon imagine a plane M L N to pass perpendicular to the line S L; the section of that plane, with the surface of the moon, will give the line that bounds light and darkness, and separates the illumined face from the dark one.

Connect the centres of the earth and moon by T L, perpendicular to a plane P L O, passing through the centre of the moon: that plane will give on the surface of the moon the circle that distinguishes the visible hemisphere, or that towards us, from the invisible one, and therefore called *the circle of vision*. Whence it appears, that whenever the moon is in A, the circle bounding light and darkness, and the circle of vision coincide; so that all the illuminated face of the moon will be turned towards the earth: in which case the moon is, with respect to us, full, and shines the whole night: with respect to the sun, she is in opposition; because the sun and moon are then seen in opposite parts of the heavens, the one rising when the other sets. But it is to be observed, that the moon's disc is not perfectly round when she is full, in the highest or lowest part of her orbit, because we have not a full view of her enlightened side at the time. When full, in the highest part of her orbit, a small deficiency appears on her lower edge: and the contrary when full in the lowest part of her orbit.

When the moon arrives at B, the whole illuminated disc M P N is not turned towards the earth; so that the visible illumination will be short of a circle; and the moon will appear gibbous, as in B.

When she reaches C, where the angle C T S is nearly right, there only one-half of the illumined disc is turned towards the earth, and then we observe a half moon, as in C; and she is said to be *dischotomized*, or *bisected*.

In this situation, the sun and moon are a fourth part of a circle removed from each other; and the moon is said to be in a *quadrate aspect*, or to be in her *quadrature*.

The moon arriving at D, only a small part of the illumined face M P N is turned towards the earth: for which reason the small part that shines upon us will be seen falcated, or bent into narrow angles, or horns, as in D.

The inclination of that part of the ecliptic to the horizon, in which the moon is at any time when horned, may be known by the position of her horns; for a right line touching their points is perpendicular to the ecliptic. And as the angle, which the moon's orbit makes with the ecliptic, can never raise her above, nor depress her below the ecliptic, more than two minutes of a degree, as seen from the sun; it can have no sensible effect upon the position of her horns. Therefore, if a quadrant be held up, so that one of its edges may be seen to touch the moon's horns, the graduated side being kept towards the eye, and as far from the eye as it can be conveniently held, the arc between the plumb-line and the edge of the quadrant, which seems to touch the moon's horns, will shew the inclination of that part of the ecliptic to the horizon. And the arc, between the other edge of the quadrant and the plumb-line, will shew the inclination of a line touching the moon's horns to the horizon.

At last, the moon arriving at E, shews no part of her illumined face at all to the earth, as in E; this position we call the *new moon*, and she is then said to be in conjunction with the sun; the sun and moon being in the same point of the ecliptic.

As the moon advances towards F, she resumes her horns: and as before the new moon the horns were turned westward, so now they change their position, and look eastward: when she comes to G, she is again in a quadrate aspect with the sun; in H she is gibbous; and in A she is again full.



Here the arc  $EL$ , or the angle  $STL$ , contained under lines drawn from the centres of the sun and moon to that of the earth, is called *the elongation of the moon* from the sun : and the arc  $MO$ , which is the portion of the illumined circle  $MON$ , that is turned towards us, and which is the measure of the angle that the circle bounding light and darkness, and the circle of vision, make with each other, is every where nearly similar to the arc of elongation  $EL$  ; or, which is the same thing, the angle  $STL$  is nearly equal to the angle  $MLO$  : as is demonstrated by geometers.

*To delineate the Moon's Phases for any Time.*—Let the circle  $COBP$  (fig. 6.) represent the moon's disc turned towards the earth, and let  $OP$  be the line in which the semi-circle  $OCB$  is projected, which suppose cut at right angles by the diameter  $BC$  ; then making  $LP$  the radius, take  $LF$  equal to the co-sine of the elongation of the moon ; and upon  $BC$ , as the greater axis, and  $LF$  the less, describe the semi-ellipse  $BFC$  ; this ellipse will cut off from the moon's disc the portion  $BFCP$ , of the illumined face visible on the earth. In other words, the visible illumined part varies as  $FP$ , the versed sine of elongation ; and we shall have the visible illumined part to the whole, as the versed sine of elongation is to the diameter.

As the moon illumines the earth by a light reflected from the sun, so she is reciprocally illumined by the earth, which reflects the sun's rays to the surface of the moon, and that much more abundantly than she receives them from the moon. For the surface of the earth is above thirteen times greater than that of the moon ; and, therefore, supposing the texture of each body alike as to the power of reflecting, the earth must return thirteen times more light to the moon than she receives from it. In new moons, the illumined side of the earth is turned fully towards the moon, and will, therefore, at that time, illumine the dark side of the moon ; and then the lunar inhabitants (if such there be) will have a full earth, as we, in a similar position, have a full moon : and hence arises that dim light observed in the old and new moons ; by which, besides the bright horns, we perceive somewhat more of her body behind them, though very obscurely.

It is well known, that when the moon is about three or four days old, the part of her disc which is not enlightened by the sun appears to an observer, in serene weather, to be faintly illumined by light reflected from the earth ; and the horns of the enlightened part seem to project beyond the old moon, as if they were part of a sphere considerably larger in diameter than the unenlightened part. This phenomenon is vulgarly called "the old moon in the new moon's arms." For the explication of this phenomenon, Dr. Jurin, in his "Essay on distinct and indistinct Vision," (Smith's Optics, vol. ii. Rem. p. 113.), supposes, that the eye cannot accommodate itself, with sufficient distinctness, to view objects at such a distance as the moon. Hence it happens, that the pencils of rays unite before they reach the retina, and form an indistinct and enlarged image of the moon. Nothing can be more demonstrable than this principle ; and it may be evinced by the simple experiment of looking at the figure of the moon cut out of white paper, and placed upon a dark ground ; for when this luminous body is covered, either at a distance too remote, or too near, for perfect vision, its image upon the retina will be enlarged, and the illumined part will encroach upon that which is obscure, and appear to embrace it, in the same manner as it is seen in the heavens.

That the illumined portion of the moon's disc, when she is three or four days old, receives its light from the

earth, which will then appear to the lunar inhabitants, like a full moon, is universally allowed ; and as the age of the moon increases, this secondary light is gradually enfeebled, partly on account of the diminution of the luminous part of the earth, and partly by the increase of the enlightened part of the moon. This secondary light, which in favourable circumstances has been observed, even when the moon was nine days and fourteen hours old, has been ascribed by Riccioli, and more lately by professor Leslie (Inquiry into the Nature and Propagation of Heat), to the supposed phosphorency of the moon. Upon this hypothesis Leslie explains the thread of light, or lucid bow, that seems to connect the two horns of the moon. After emerging from conjunction with the sun, says this ingenious philosopher, her sharp horns are seen, connected by a silver thread, or lucid bow, which completes the circle ; and a faint light seems to be suffused over the included space. This bright arc, however, becomes always less vivid ; and before the moon is five or six days old, it has almost totally vanished. The pale outline of the old moon is commonly ascribed to the reflection, or secondary illumination upon the earth. But if it were derived from that source, it would appear densest near the centre, and gradually more dilute towards the edge. "I should rather refer it," says our author, "to the spontaneous light which the moon may continue to emit for some time after the phosphorescent substance has been excited by the action of the solar beams. The lunar disc is visible, although completely covered by the shadow of the earth ; nor can this fact be explained by the inflection of the sun's rays in passing through our atmosphere ; for why does the rim appear so brilliant ? Any such inflection could only produce a diffuse light, obscurely tinging the boundaries of the lunar orb ; and in this case the earth, presenting its dark side to the moon, would have no power to heighten the effect by reflection. But even when this reflection is greatest about the time of conjunction, its influence seems extremely feeble. The lucid bounding arc is occasioned by the narrow *lunula*, which, having recently felt the solar impression, still continues to shine, and, from its extreme obliquity, glows with concentrated effect." Dr. Brewster, dissatisfied with the professor's explanation of the phenomenon above stated, proposes another, which, in his opinion, is so simple and convincing, as to claim an implicit reception. By looking at any map of the moon, which exhibits even a tolerable representation of the lunar surface, we shall find that the eastern limb of the moon is separated from the central parts of her disc by darker regions, and that the luminous portion, comprehended between these darker regions and the circular line which bounds her eastern limb, has actually the form of a bow, which is broadest towards her southern limb, and gradually diminishes in breadth towards her northern horn. The immediate cause, therefore, of the lucid bow is to be sought for in the accidental circumstance of the moon's eastern limb being more luminous than the adjacent regions towards the centre. The central parts of the moon, indeed, are equally luminous with her eastern limb ; but their brilliancy is impaired by their proximity to the illumined portion. It is obvious, that this explanation of the phenomenon may be equally just, whether the secondary light of the moon is caused by phosphorency or by reflection from the earth. Brewster's edition of Ferguson's Astronomy, vol. ii. But to return from this digression to the farther progress of the moon in her orbit.

When the moon comes to be in opposition to the sun, the earth, seen from the moon, will appear in conjunction



tion with him, and its dark side will be turned towards the moon; in which position the earth will disappear to the moon as that does to us at the time of the new moon, or in her conjunction with the sun. After this, the lunar inhabitants will see the earth in an horned figure. In fine, the earth will present all the same phases to the moon, as the moon does to the earth. But from one-half of the moon, the earth is never seen at all; from the middle of the other half it is always seen over head, turning round almost thirty times as quick as the moon does. From the circle which limits our view of the moon, only one-half of the earth's side next her is seen; the other half being hid below the horizon of all places on that circle. To her the earth seems to be the biggest body in the universe; for it appears thirteen times as big as she does to us. As the earth turns round its axis, the several continents, seas, and islands appear to the moon's inhabitants like so many spots of different forms and brightness, moving over its surface; but much fainter at some times than others, as our clouds cover or leave them. By these spots, the Lunarians can determine the time of the earth's diurnal motion, just as we do the motion of the sun; and perhaps they measure their time by the motion of the earth's spots; for they cannot have a truer dial.

Dr. Hooke, accounting for the reason why the moon's light affords no visible heat, observes that the quantity of light, which falls on the hemisphere of the full moon, is rarefied into a sphere 288 times greater in diameter than the moon, before it arrives at us; and, consequently, that the moon's light is 104,368 times weaker than that of the sun. It would, therefore, require 104,368 full moons to give a light and heat equal to that of the sun at noon. The light of the moon, condensed by the best mirrors, produces no sensible heat upon the thermometer.

Dr. Smith has endeavoured to shew, in his book on Optics, that the light of the full moon is but equal to a 90900th part of the common light of the day, when the sun is hidden by a cloud. For other observations on this subject, see LIGHT.

**MOON, Course and Motion of the.** Though the moon finishes its course in  $27^d 7^h 43' 5''$ , which interval we call a *periodical* month, yet she is longer in passing from one conjunction to another; which space we call a *synodical* month, or a *lunation*. The reason is, that while the moon is performing its course round the earth in its own orbit, the earth and moon are making their progress round the sun, and both are advanced almost a whole sign towards the east; so that the point of the orbit, which in the former position was in a right line passing through the centres of the earth and sun, is now more westerly than the sun; and, therefore, when the moon is arrived again at that point, it will not yet be seen in conjunction with the sun; nor will the lunation be completed in less than 29 days and a half, or  $29^d 12^h 44' 2''$ . 8.

The moon's periodical and synodical revolution may be familiarly represented by the motions of the hour and minute hands of a watch round its dial-plate, which is divided into 12 equal parts or hours, as the ecliptic is divided into 12 signs, and the year into 12 months.

Let us suppose these 12 hours to be 12 signs, the hour-hand the sun, and the minute-hand the moon; then the former will go round once in a year, and the latter once in a month; but the moon, or minute-hand, must go more than round from any point of the circle where it was last conjoined with the sun, or hour-hand, to overtake it again; for the hour-hand being in motion, can never be overtaken by the minute-hand at that point from which they started at

their last conjunction. The first column of the annexed table shews the number of conjunctions which the hour and minute-hand make whilst the hour-hand goes once round the dial-plate; and the other columns shew the times when the two hands meet at each conjunction. Thus, suppose the two hands to be in conjunction at XII, as they always are; then, at the first following conjunction it is 5 minutes 27 seconds 16 thirds 21 fourths  $49\frac{1}{4}$  fifths past I, where they meet; at the second conjunction it is 10 minutes 54 seconds 32 thirds 43 fourths  $38\frac{2}{3}$  fifths past II; and so on. This, though an easy illustration of the motions of the sun and moon, is not precise as to the times of their conjunctions; because, while the sun goes round the ecliptic, the moon makes  $12\frac{1}{2}$  conjunctions with him; but the minute-hand of a watch or clock makes only 11 conjunctions with the hour-hand in one period round the dial-plate. But if, instead of the common wheel-work at the back of the dial-plate, the axis of the minute-hand had a pinion of 6 leaves turning a wheel of 74, and this last turning the hour-hand, in every revolution it makes round the dial-plate, the minute-hand would make  $12\frac{1}{2}$  conjunctions with it; and so would be a pretty device for shewing the motions of the sun and moon; especially as the slowest moving hand might have a little sun fixed on its point, and the quickest a little moon.

Conj.	II.	M.	S.	III.	IIII.	V P <sup>ts</sup> .
1	I	5	27	16	21	$49\frac{1}{4}$
2	II	10	54	32	43	$38\frac{2}{3}$
3	III	16	21	49	5	$27\frac{1}{4}$
4	IV	21	49	5	27	$16\frac{1}{4}$
5	V	27	10	21	49	$5\frac{5}{4}$
6	VI	32	43	38	10	$54\frac{6}{4}$
7	VII	38	10	54	32	$43\frac{7}{4}$
8	VIII	43	38	10	54	$32\frac{8}{4}$
9	IX	49	5	27	16	$21\frac{9}{4}$
10	X	54	32	43	38	$10\frac{10}{4}$
11	XII	0	0	0	0	0

Were the plane of the moon's orbit coincident with the plane of the ecliptic, *i. e.* were the earth and moon both moved in the same plane, the moon's way in the heavens, viewed from the earth, would appear just the same with that of the sun; with this only difference, that the sun would be found to describe his circle in the space of a year, and the moon her's in a month. But this is not the case; for the orbits of the two planets cut each other in a right line, passing through the centre of the earth, and are inclined to each other in an angle of about five degrees eighteen minutes.

Suppose, *e. g.* A B (*fig. 7.*) a portion of the earth's orbit, T the earth, and C E D F the moon's orbit, in which is the centre of the earth; from the same centre T, in the plane of the ecliptic, describe another circle C G D H, whose semi-diameter is equal to that of the moon's orbit. Now these two circles, being in separate planes, and having the same centre, will intersect each other in a line D C, passing through the centre of the earth. Consequently, C E D, one-half of the orbit of the moon, will be raised above the plane of the circle C G H, towards the north; and D F C, the other half, will be sunk below towards the south. The right line D C, in which the two circles intersect each other, is called the *line of the nodes*, and the points of the angles C and D, the *nodes*: of which that where the moon ascends above the plane of the ecliptic, northwards, is called the *ascending node*, and the *head of the dragon*; and the other D, the *descending node*, and the *dragon's tail*;



tail; and the interval of time between the moon's going from the ascending node, and returning to it, a *draconic month*.

If the line of the nodes were immoveable, that is, if it had no other motion but that by which it is carried round the sun, it would still look towards the same point of the ecliptic; *i. e.* it would always keep parallel to itself; but it is found by observation, that the line of the nodes constantly changes place, and shifts in situation from east to west, contrary to the order of the signs; and, by a retrograde motion, finishes its circuit in about nineteen years; in which time each of the nodes returns to that point of the ecliptic whence it before receded.

Hence it follows, that the moon is never precisely in the ecliptic, but twice each period; *viz.* when she is in the nodes. Throughout the rest of her course she deviates from it, being nearer or farther from the ecliptic, as she is nearer or farther from the nodes. In the points F and E she is at her greatest distance from the nodes; which points are therefore called her *limits of north and south latitude*.

The moon's distance from the nodes, or rather from the ecliptic, is called her *latitude*, which is measured by an arc of a circle drawn through the moon, perpendicular to the ecliptic, and intercepted between the moon and the ecliptic. The moon's latitude, when at the greatest, as in E or F, never exceeds 5 degrees and about 18 minutes; which latitude is the measure of the angles at the nodes.

It appears by observation, that the moon's distance from the earth is continually changing; and that she is always either drawing nearer, or going farther from us. The reason is, that the moon does not move in a circular orbit, which has the earth for its centre; but in an elliptic orbit (as represented in *fig. 8*), one of whose foci is the centre of the earth: A P represents the greater axis of the ellipse, and the line of the apses; and T C the excentricity; the point A, which is the highest apsis, is called the *apogee* of the moon; and P, the lower apsis, is the moon's *perigee*, or the point in which she comes nearest the earth.

Besides, there is reason to believe, that the moon is somewhat nearer the earth now than she was formerly; her periodical month being shorter than it was in former ages. For our astronomical tables, which in the present age shew the time of solar and lunar eclipses to great precision, do not answer so well for ancient eclipses.

The space of time in which the moon, going from the apogee, returns to it again, is called the *anomalistic month*.

If the moon's orbit had no other motion but that with which it is carried round the sun, it would still retain a position parallel to itself, and always point the same way, and be observed in the same point of the ecliptic; but the line of the apses is likewise observed to be moveable, and to have an angular motion round the earth, from west to east, according to the order of the signs, returning to the same situation in the space of about nine years.

The *irregularities of the moon's motion*, and that of her orbit, are very considerable. For, 1. When the earth is in her aphelion, the moon is in her aphelion likewise; in which case she quickens her pace, and performs her circuit in a shorter time: on the contrary, when the earth is in its perihelion, the moon is so too, and then she slackens her motion; and thus she revolves round the earth, in a shorter space, when the earth is in her aphelion than when in her perihelion; so that the periodical months are not all equal.

2. When the moon is in her syzygies, *i. e.* in the line that joins the centres of the earth and sun, which is either in her

conjunction or opposition, she moves swifter, *ceteris paribus*, than when in the quadratures.

3. According to the different distances of the moon from the syzygies, *i. e.* from opposition to conjunction, she changes her motion: in the first quarter, that is, from the conjunction to her first quadrature, she abates somewhat of her velocity; which in the second quarter she recovers; in the third quarter she again loses; and in the last she again recovers. Hence the areas described are accelerated and retarded; and the mean place differs from the true. This inequality was first discovered by Tycho Brahe, who called it *the moon's variation*. At different distances of the earth from the sun, the disturbing forces vary, and, therefore, the equation, called the "variation," being first calculated for the mean distance of the earth from the sun, will be subject to a variation from the variation of that distance; and hence some new equations will arise.

4. The moon moves in an ellipse, one of whose foci is in the centre of the earth, round which she describes areas proportionable to the times, as the primary planets do round the sun; whence the motion in her perigee must be quickest, and it must be slowest in the apogee.

5. The very orbit of the moon is changeable, and does not always preserve the same figure; its excentricity being sometimes increased, and sometimes diminished: it is greatest, when the line of the apses coincides with that of the syzygies; and least, when the line of the apses cuts the other at right angles.

The moon's orbit being dilated or contracted as the earth approaches to or recedes from the sun, its motion will accordingly be diminished or increased; and hence arises an annual equation, assigning the difference between the mean motion at the mean distance of the earth from the sun, and the mean motion at any other distance of the sun. The variation depending on the true distance of the sun from the moon, will produce several other equations, arising from the different corrections that are made. The change of the excentricity causes a change of the *equation of the centre*, called the *evulsion*, and hence new equations must be applied. See these terms respectively and EXCENTRICITY.

6. Nor is the apogee of the moon without an irregularity; being found to move forward, when it coincides with the line of the syzygies; and backward, when it cuts that line at right angles. Nor are this progress and regress in any measure equal; in the conjunction or opposition, it goes briskly forward; and in the quadratures it moves either slowly forward, stands still, or goes backwards. Upon the whole, however, the motion of the apogee is progressive. Hence arises an equation of the motion of the apogee, which depends upon its distance from the sun; and there is also a smaller annual equation, arising from the disturbing forces being different at different times of the year.

7. The motion of the nodes is not uniform; but when the line of the nodes coincides with that of the syzygies at right angles, they go backward, from east to west; and this, sir Isaac Newton shews, is at the rate of  $16'' 19''' 24''''$  in an hour. See the preceding part of this article, and NODES.

The only equable motion the moon has, is that with which she turns round her axis exactly in the same space of time in which she revolves round us in her orbit; whence it happens, that she always turns the same face towards us.

For as the moon's motion round its axis is equal, and yet its motion, or velocity, in its orbit, is unequal, it follows, that when the moon is in its perigee, where it moves swiftest in its orbit, that part of its surface, which, on account of its



its motion in the orbit, would be turned from the earth, is not so entirely; by reason of its motion round its axis. Thus some parts in the limb or margin of the moon, sometimes recede from the centre of the disc, and sometimes approach towards it; and some parts, that were before invisible, become conspicuous; which is called the moon's *libration*.

Yet this equability of rotation occasions an apparent irregularity; for the axis of the moon not being perpendicular to the plane of her orbit, but a little inclined to it; and this axis, maintaining its parallelism, in its motion round the earth; it must necessarily change its situation, in respect of an observer on the earth; to whom sometimes the one, and sometimes the other pole of the moon becomes visible; whence it appears to have a kind of wavering, or vacillation. See *LIBRATION*.

The irregularities above enumerated, and some others of a similar kind, have been urged as objections to the Newtonian theory of gravity, though they were anticipated by the illustrious author, who not only evinced their consistency with it, but suggested the explication of them which might be deduced from that theory, properly understood and applied. Sir Isaac Newton having found, in the manner which we shall presently explain, that the moon was retained in its orbit by a force, which, at different distances from the earth, varied inversely as the squares of the distances, and concluding from analogy that the same law of attraction might take place between all the bodies in the system, applied this theory to compute the effect of the sun's attraction upon the earth and moon, so far as it might affect the relative situation of the latter as seen from the former; and hence he discovered, besides the irregularities already mentioned, other smaller inequalities of the moon's motion, which were also found to agree with observations. From this, and other applications of his theory, he was confirmed in his conjectures concerning the principle of universal gravitation; and the farther investigation of the same principle, and the discovery that it produced conclusions conformable to observation, served firmly to establish his theory. M. Clairaut, indeed, in the year 1747, published a memoir which was read before the Academy of Sciences at Paris, and urged as an objection against it, that it would not account for the motion of the moon's apogee, but that this motion, deduced from it by his calculations, was only one-half of what it was found to be by observations. But soon after discovering his mistake, and possessing candour enough to acknowledge it, he was the first who gave a complete theory of the moon, in which he shewed that sir I. Newton's law of gravity would not only account for the motion of the moon's apogee, but also for all the other irregularities of the moon. M. Euler also retracted his own erroneous opinion, in deference to the judgment of M. Clairaut; and concurs with him in doing ample justice to the Newtonian theory. "After most tedious calculations," says Euler, "I have at length found, to my satisfaction, that M. Clairaut was in the right, and that this theory is entirely sufficient to explain the motion of the apogee of the moon. As this enquiry is of the greatest difficulty, and as those, who hitherto pretended to have proved this nice agreement of the theory with the truth, have been much deceived, it is to M. Clairaut that we are obliged for this important discovery, which gives quite a new lustre to the theory of the GREAT NEWTON; and it is but now that we can expect good astronomical tables of the moon." Others, and particularly Mr. Machin and M. Frisè, have prosecuted a similar investigation of this theory, and contributed to establish it. What Euler and astronomers to expect, they have now actually obtained

in Mayer's tables, as corrected by Dr. Maskelyne, which, founded upon a very elegant theory conformable to observations, are the most correct, and do not err more than half a minute in longitude. See *LONGITUDE* and *LUNAR Observations*.

*Moon's Motions, Physical Cause of the.* The moon, we have observed, moves round the earth by the same laws, and in the same manner, as the earth and other planets move round the sun. The solution, therefore, of the lunar motions, in general, comes under those of the earth and other planets.

As for the particular irregularities in the moon's motion, to which the earth, and other planets, are not subject, they arise from the sun, which acts on, and disturbs her in her ordinary course through her orbit; and are all mechanically deducible from the same great law by which her general motion is directed; viz. the law of gravitation and attraction.

Other secondary planets, v. g. the satellites of Jupiter and Saturn, are, doubtless, subject to the like irregularities with the moon; as being exposed to the same perturbing or disturbing force of the sun; but their distance secures them from our observation.

The laws of the several irregularities in the syzygies, quadratures, &c. see under *SYZYGIES*, *QUADRATURES*, &c.

It would not be consistent with the limits or nature of this work to investigate, by tedious and elaborate processes of an analytical and geometrical kind, the various equations that have been explored for the illustration of these laws, and for furnishing a complete theory of the moon. Much has been done in this way by several learned mathematicians, and of late by professor Vince, who is eminently qualified for the undertaking: and we shall therefore refer the reader, who may be desirous of farther information, and who has no access to a variety of other publications, to the second volume of Vince's *Complete System of Astronomy*, chap. xxxii.

We shall, however, in this place, introduce a general view of the Newtonian theory of gravity, as it is applied to the solution of the irregularities of the moon's motion.

We have already, under the article *GRAVITATION*, illustrated and confirmed the Newtonian theory of gravity, as it regards the moon and the other planets; but as the subject is of importance, and as it is immediately connected with what follows, we shall here give a concise statement of the leading fact by which the identity of the centripetal force, as it respects the moon, and that of gravity, was originally explained and established, referring for a more detailed account to the article just cited.

It is well known, and universally allowed, that the planets are retained in their orbits by some power which is continually acting upon them; that this power is directed towards the centres of their orbits; that the efficacy of this power increases upon an approach to the centre, and diminishes by its recess from the same; and that it increases according to a certain law, viz. that of the squares of the distances, as the distance diminishes; and that diminishes in the same manner as the distance increases. Now by comparing this centripetal force of the planets with the force of gravity on earth, they will be found perfectly alike. This we shall illustrate in the case of the moon, the nearest to us of all the planets. The rectilinear spaces described in any given time by a falling body, urged by any powers, reckoning from the beginning of its descent, are proportionable to those powers. Consequently the centripetal force of the moon, revolving in its orbit, will be to the force of gravity on the surface of the earth, as the space



space which the moon would describe in falling any little time, by her centripetal force towards the earth, if she had no circular motion at all, to the space which a body near the earth would describe in falling, by its gravity towards the same. By a very easy and obvious calculation of these two spaces it will appear, that the first of them is to the second, *i. e.* the centripetal force of the moon revolving in her orbit is to the force of gravity on the surface of the earth, as the square of the earth's semidiameter to the square of the semidiameter of her orbit, which is the same ratio as that of the moon's centripetal force in her orbit to the same force near the surface of the earth. The moon's centripetal force is, therefore, equal to the force of gravity. These forces, consequently, are not different, but they are one and the same; for if they were different, bodies acted upon by the two powers conjointly, would fall towards the earth with a velocity double to that arising from the sole power of gravity. It is evident, therefore, that the moon's centripetal force, by which she is retained in her orbit, and prevented from running off in tangents, is the very power of gravity of the earth, extended thither. This reasoning may be farther illustrated and confirmed in the following manner. Let R A E (*Plate XVII. Astronomy, fig. 9.*) represent the earth, T its centre, V L the orbit of the moon, and L C a part of it described by the moon in a minute, which is equal to  $\frac{1}{3533}$  of the whole periphery, or 33 seconds of a degree; because the moon completes her whole course in 27 days, seven hours, 43 minutes, or in 39343 minutes. Moreover, the circumference of the earth, according to M. Picart's mensuration, is 123249600 Paris feet, and therefore its semidiameter T A = 19615800 feet; and T L, the semidiameter of the moon's orbit, will be 1176948000 feet, or = 60 times T A; and the versed sine L D of the arc L C = 33", computed by means of tables, or B C, will be  $15\frac{1}{2}$  feet, nearly: or L D may be found without tables thus; the whole circumference of the moon's orbit, or  $60 \times 123249600$ , is equal to 7394976000, which divided by 39343, will give the arc L C = 187961 feet; but by a well-known theorem in geometry, supposing the arc L C, which is a very small part of the moon's orbit, to be rectilinear, L C = L D  $\times$

$$2 L T, \text{ i. e. } L D = \frac{L C^2}{2 L T}, \text{ or the square of } 187961, \text{ which}$$

is 35329337521, divided by 2353896000, will give 15.013, &c. It may be here observed, that a distance of the moon somewhat greater than 60 times the diameter of the earth would afford a more exact result; and the force by which the moon is restrained in its orbit should also be increased in the proportion of  $177\frac{1}{2}$  to  $178\frac{3}{8}$ , in order to have the exact centripetal force of the moon, such as it would be undiminished by the action of the sun, and with this correction the above number 15.013, &c. will become 15.097, &c. or  $15\frac{1}{12}$  very nearly. (See Newton's Principia, lib. i. prop. 45. cor. 2. and lib. iii. prop. 3.) In either way of calculation it appears that the force, by which the moon is drawn off from the tangent L B, or retained in its orbit, impels it towards the centre of the earth about  $15\frac{1}{12}$  Paris feet in one minute: but this force, being known from the elliptic figure of her orbit to be reciprocally proportional to the square of the distance, would impel the moon, supposed to be at the surface of the earth, through a space equal to  $60 \times 60 \times 15\frac{1}{12}$  feet in one minute. But bodies, impelled by the force of gravity, fall near the surface of the earth through the space of  $15\frac{1}{12}$  Paris feet in one second, and the spaces being as the squares of the times, through  $60 \times 60 \times 15\frac{1}{12}$  in a minute. Consequently, as the force by which the moon is retained in its orbit, and the force of gravity, produce the same effects in

the same circumstances, and tend towards the same point, they are the same forces. The moon, therefore, gravitates towards the earth, and the earth reciprocally towards the moon; and this law is further confirmed by the phenomena of the tides. See TIDES.

The like reasoning might be applied to the other planets. For, as the revolutions of the primary planets round the sun, and those of the satellites of Jupiter, Saturn, and the Georgium Sidus, round their primaries, are phenomena of the same kind as the revolution of the moon round the earth; as the centripetal powers of the primary are directed towards the centre of the sun, and those of the satellites towards the centres of their primaries; and, lastly, as all these powers are reciprocally as the squares of the distances from the centres; it may safely be concluded, that the power and cause are the same in all. Therefore, as the moon gravitates towards the earth, and the earth towards the moon, so do all the secondaries to their respective primaries; the primaries to the sun, and the sun to the primaries, &c. Newton's Princ. lib. iii. prop. 4, 5, 6. Gregory's Ast. lib. i. § 7. prop. 46 and 47.

In solving the irregularities of the moon's motion, agreeably to the theory of gravity, previously established, it must first be considered, that if the sun acted equally on the earth and moon, and always in parallel lines, this action would serve only to restrain them in their annual motions round the sun, and no way affect their actions on each other, or their motions about their common centre of gravity. But because the moon is nearer the sun, in one half of her orbit, than the earth is, and farther in the other half of her orbit, and the power of gravity is always greater at a less distance, it follows, that, in one half of her orbit the moon is more attracted than the earth towards the sun, and in the other half less attracted than the earth: and hence irregularities necessarily arise in the motions of the moon; the excess, in the first case, and the defect, in the second, of the attraction, becoming a force that disturbs her motion: and besides, the action of the sun on the earth and moon, is not directed in parallel lines, but in lines that meet in the centre of the sun.

In order to understand the effects of these powers, let us suppose that the projectile motions of the earth and moon were destroyed, and that they were allowed to fall freely towards the sun. If the moon was in conjunction with the sun, or in that part of her orbit which is nearest to him, the moon would be more attracted than the earth, and fall with greater velocity towards the sun; so that the distance of the moon from the earth would be increased in the fall. If the moon was in opposition, or in the part of her orbit which is farthest from the sun, she would be less attracted than the earth by the sun, and would fall with less velocity towards the sun than the earth, and the moon would be left behind by the earth; so that the distance of the moon from the earth would be increased, in this case also. If the moon was in one of the quarters, then the earth and moon being both attracted towards the centre of the sun, they would both directly descend towards that centre, and, by approaching to the same centre, they would necessarily approach at the same time to each other, and their distance from one another would be diminished, in this case. Now, wherever the action of the sun would increase their distance, if they were allowed to fall towards the sun, there we may be sure the sun's action, by endeavouring to separate them, diminishes their gravity to each other; wherever the action of the sun would diminish their distance, there the sun's action, by endeavouring to make them approach to



one another, increases their gravity to each other: that is, in the conjunction and opposition, their gravity towards each other is diminished by the action of the sun; but in the two quarters it is increased by the action of the sun. To prevent mistaking this matter, it must be remembered, it is not the total action of the sun on them that disturbs their motions, it is only that part of its action, by which it tends to separate them, in the first case, to a greater distance from each other; and that part of its action, by which it tends to bring them nearer to each other, in the second case, that has any effect on their motions, with respect to each other. The other, and the far more considerable part, has no other effect but to retain them in their annual course, which they perform together about the sun.

In considering, therefore, the effects of the sun's action on the motions of the earth and moon, with respect to each other, we need only attend to the excess of its action on the moon above its action on the earth, in their conjunction; and we must consider this excess as drawing the moon from the earth towards the sun in that place. In the opposition, we need only consider the excess of the action of the sun, on the earth, above its action on the moon, and we must consider this excess as drawing the moon from the earth, in this place, in a direction opposite to the former, that is, towards the place opposite to where the sun is; because we consider the earth as quiescent, and refer the motion, and all its irregularities to the moon. In the quarters, we consider the actions of the sun as adding something to the gravity of the moon towards the earth.

Suppose the moon setting out from the quarter that precedes the conjunction, with a velocity that would make her describe an exact circle round the earth, if the sun's action had no effect on her; and because her gravity is increased by that action, she must descend towards the earth, and move within that circle: her orbit, there, will be more curve than otherwise it would have been; because this addition to her gravity will make her fall farther at the end of an arc below the tangent drawn at the other end of it; her motion will be accelerated by it, and will continue to be accelerated, till she arrives at the ensuing conjunction; because the direction of the action of the sun upon her, during that time, makes an acute angle with the direction of her motion. At the conjunction, her gravity towards the earth being diminished by the action of the sun, her orbit will be less curve there for that reason; and she will be carried farther from the earth, as she moves to the next quarter; and because the action of the sun makes then an obtuse angle with the direction of her motion, she will be retarded by the same degrees by which she was accelerated before.

Thus she will descend a little towards the earth, as she moves from the first quarter towards the conjunction, and ascend from it, as she moves from the conjunction to the next quarter. The action which disturbs her motion will have a like, and almost equal effect upon her, while she moves in the other half of her orbit, that is, that half of it which is farthest from the sun: she will proceed from the quarter that follows the conjunction with an accelerated motion to the opposition, approaching a little towards the earth, because of the addition made to her gravity, at that quarter, from the action of the sun; and receding from it again, as she goes on from the opposition to the quarter, from which we supposed her to set out. The areas described in equal times, by a ray drawn from the moon to the earth, will not be equal, but will be accelerated by the conspiring action of the sun, as she moves towards the conjunction or opposition from the quarters that precede them:

and will be retarded by the same action, as she moves from the conjunction or opposition to the quarters that succeed them. Newton has computed the quantities of these irregularities from their causes. He finds, that the force added to the gravity of the moon, in her quarters, is to the gravity with which she would revolve in a circle about the earth, at her present mean distance, if the sun had no effect on her, as 1 to  $178\frac{2}{3}$ . He finds the force subducted from her gravity, in the conjunctions and oppositions, to be double of this quantity, and the area described in a given time in the quarters, to be to the area described in the same time in the conjunctions and oppositions, as 10973 to 11073. He finds, that in such an orbit, her distance from the earth in her quarters, would be to her distance in the conjunctions and oppositions, as 70 to 69. This is the variation of the form of the orbit arising from the force of the sun, supposing that the orbit would have been a circle without that disturbing force. And as the orbit of the moon is an ellipse, having the earth in its focus, and approaching nearly to a circle, the same cause must produce very nearly the same effect in the moon's orbit. Dr. Halley first took notice of this contraction of the lunar orbit in syzygies, from the phenomena of the moon's motion, and made the ratio of the diameter as 44.5 : 45.5, from observation.

From the alteration of the form of the orbit and from the acceleration of the areas, there will arise two corrections to be applied to the mean motion of the moon, in order to give the true motion; and the joint effect of these two constitutes an equation, called the "variation."

As to the effect of the action of the sun on the nodes, and, consequently, on the inclination of the moon's orbit to the ecliptic, see *NODES*, and the preceding part of this article.

Moreover, the action of the sun diminishes the gravity of the moon towards the earth, in the conjunctions and oppositions, more than it adds to it in the quarters, and, by diminishing the force, which retains the moon in her orbit, increases her distance from the earth and her periodic time: and because the earth and moon are nearer the sun in their perihelion than in their aphelion, and the sun acts with a greater force there, so as to subduct more from the moon's gravity towards the earth; it follows, that the moon must revolve at a greater distance, and take a longer time to finish her revolution in the perihelion of the earth, when her orbit is dilated, and she moves slower, than in the aphelion, when the moon's orbit is contracted, and she moves faster. The annual equation, by which this inequality is compensated, is nothing in aphelion and perihelion; and at the mean distance of the sun it is  $12' 55''$ , according to professor Vince's determination. Sir Isaac Newton makes it  $11' 50''$ : according to Mayer, it is  $11' 16''$ : M. d'Alembert makes it  $12' 57''$ : Halley makes it about  $13'$ : according to M. de la Lande, it is  $11' 8''.6$ ; and this also is conformable to observation.

There is another remarkable irregularity in the moon's motion, that also arises from the action of the sun: which is the progressive motion of the apses. The moon describes an ellipse about the centre of the earth, having one of the foci in that centre. Her greatest and least distances from the earth are in the apses, or extremities of the longer axis of the ellipse. This is not found to point always to the same place in the heavens, but to move with a progressive motion forwards, so as to finish a revolution round the earth's centre in about nine years.

To understand the reason of this motion of the apses, we must consider, that, if the gravity of a body decreased less as the distance increases, then according to the regular course



course of gravity, the body would descend sooner from the higher to the lower apsis, than in half a revolution; and therefore the apsis would recede in that case, for it would move in a contrary direction to the motion of the body, meeting it in its motion. But if the gravity of the body should decrease more, as the distance increases, than according to the regular course of gravity, that is, in a higher proportion than as the square of the distance increases, the body would take more than half a revolution to move from the higher to the lower apsis; and, therefore, in that case, the apsidal would have a progressive motion in the same direction as the body.

In the quarters, the sun's action adds to the gravity of the moon, and the force it adds is greater, as the distance of the moon from the earth is greater; so that the action of the sun hinders her gravity towards the earth from decreasing as much while the distance increases, as it ought to do according to the regular course of gravity; and, therefore, while the moon is in the quarters, her apsidal must recede. In the conjunction and opposition, the action of the sun subducts from the gravity of the moon towards the earth, and subducts the more the greater her distance from the earth is, so as to make her gravity decrease more as her distance increases, than according to the regular course of gravity; and, therefore, in this case, the apsidal are in a progressive motion. Because the action of the sun subducts more in the conjunctions and oppositions from her gravity, than it adds to it in the quarters, and, in general, diminishes more than it augments her gravity; hence it is that the progressive motion of the apsidal exceeds the retrograde motion; and, therefore, the apsidal are carried round according to the order of the signs. The annual equation of the apsidal, according to sir Isaac Newton, is  $19' 43''$ . See Maclaurin's Account of sir Isaac Newton's Phil. Disc. lib. iv. c. 4. We have some observations and tables concerning the moon's motion, by Mr. Richard Dunthorn, in the Philosophical Transactions, N<sup>o</sup> 482. sect. 13, where he gives 100 observed longitudes of the moon compared with the tables, viz. 25 eclipses of the moon, taken (except the first) from Flamsteed's Historia Cœlestis, the Philosophical Transactions, and the Memoirs of the Royal Academy of Sciences; the two great eclipses of the sun in 1706 and 1715; 25 select places of the moon, from Flamsteed's Historia Cœlestis; and 48 of those longitudes of the moon, computed from Flamsteed's Observations by Dr. Halley, and printed in the first edition of the Historia Cœlestis.

*Theory of the Moon's Motions and Irregularities.*—The tables of equation, which serve to solve the irregularities of the sun, do likewise serve for those of the moon.

But then these equations must be corrected for the moon, otherwise they will not exhibit the true motions in the syzygies. The method is thus: Suppose the moon's place in the zodiac, required in longitude, for any given time; here, we first find, in the tables, the place where it would be, supposing its motion uniform, which we call *mean*, and which is sometimes faster, and sometimes slower, than the true motion: then, to find where the true motion will place her, which is also the *apparent*, we are to find in another table at what distance it is from its apogee; for, according to this distance, the difference between her true and mean motion, and the two places which correspond thereto, is the greater. The true place thus found, is not yet the true place; but varies from it, as the moon is more or less remote both from the sun, and the sun's apogee: which variation respecting, at the same time, those two different distances, they are to be both considered and combined together,

as in a table apart. Which table gives the correction to be made of the true places first found. That place, thus corrected, is not yet the *true* place, unless the moon be either in conjunction, or opposition: if she be out of these, there must be another correction, which depends on two things taken together, and compared, viz. the distance of the moon's corrected place from the sun; and of that at which she is with regard to her own apogee; this last distance having been changed by the first correction.

By all these operations and corrections, we at length arrive at the moon's true place for that instant. In this, it must be owned, there occur prodigious difficulties: the lunar equalities are so many, that it was in vain the astronomers laboured to bring them under any rule, before the great sir Isaac Newton; to whom we are indebted both for the mechanical causes of these inequalities, and for the method of computing and ascertaining them: so that he has given us a world, in a great measure, of his own discovering, or rather subduing.

From the theory of gravity he shews, that the larger planets, revolving round the sun, may carry along with them smaller planets, revolving round themselves; and shews also, *a priori*, that these smaller must move in ellipses having their umbilici in the centres of the larger; and must have their motion in their orbits variously disturbed by the motion of the sun; and in a word, must be affected with those inequalities which we actually observe in the moon. And from this theory, he argues analogous irregularities in the satellites of Saturn.

From the same theory he examines the force which the sun has to disturb the moon's motion, determines the horary increase of the area which the moon would describe in a circular orbit by radii drawn to the earth—her distance from the earth—the horary motion in a circular and elliptic orbit—the mean motion of the nodes—the true motion of the nodes—the horary variation of the inclination of the moon's orbit to the plane of the ecliptic. Lastly, from the same theory he has found the annual equation of the moon's mean motion to arise from the various dilatation of her orbit; and that variation to arise from the sun's force, which being greater in the perigee, distends the orbit; and, being less in the apogee, suffers it to be again contracted. In the dilating orbit she moves more slowly; in the contracted, more swiftly; and the annual equation, whereby this inequality is compensated, in the apogee and perigee, is nothing at all; at a moderate distance from the sun, it amounts to  $11' 50''$ ; and in other places it is proportional to the equation of the sun's centre, and is added to the mean motion of the moon, when the earth proceeds from its apohelion to its perihelion; and subtracted when in the opposite part.

Thus, supposing the radius of the *orbis magnus* 1000, and the earth's excentricity  $16'$ ; this equation, when greatest, according to the theory of gravity, comes out  $11' 49''$ .

He adds, that in the earth's perihelion, the nodes move swifter than in the apohelion, and that in a triplicate ratio of the earth's distance from the sun, inversely. Whence arise annual equations of their motions, proportionable to that of the centre of the sun. Now the sun's motion is in a duplicate ratio of the earth's distance from the sun inversely, and the greatest equation of the centre which this inequality occasions, is  $1' 56' 26''$ , agreeable to the sun's excentricity  $16\frac{1}{2}'$ . If the sun's motion were in a triplicate ratio of its distance inversely, this inequality would generate the greatest equation  $2' 56' 9''$ ; and therefore the greatest equations which the inequalities of the motions of the moon's apogee



and nodes occasion, are to  $2^{\circ} 56' 9''$ , as the mean diurnal motion of the moon's apogee, and the mean diurnal motion of her nodes, are to the mean diurnal motion of the sun. Whence the greatest equation of the mean motion of the apogee comes out  $19' 42''$ ; and the greatest equation of the mean motion of the nodes  $9' 27''$ . The former equation is added, and the latter subtracted, when the earth proceeds from its perihelion to its aphelion, and the contrary in the opposite part of its orbit.

From the same theory of gravity, it also appears that the sun's action on the moon must be somewhat greater when the transverse diameter of the lunar orbit passes through the sun, than when it is at right angles with the line that joins the earth and sun; and, therefore, that the lunar orbit is somewhat greater in the first case than in the second. Hence arises another equation of the mean lunar motion, depending on the situation of the moon's apogee with regard to the sun, which is greatest when the moon's apogee is in an octant with the sun; and none, when she arrives at the quadrature, or syzygies; and is added to the mean motion, in the passage of the moon's apogee from the quadrature to the syzygies, and subtracted in the passage of the apogee from the syzygies to the quadrature.

This equation, which sir Isaac calls *semestris*, when greatest, viz. in the octants of the apogee, rises to  $3' 45''$ , at a mean distance of the earth from the sun; but it increases and diminishes in a triplicate ratio of the sun's distance inversely; and therefore, in the sun's greatest distance, is  $3' 34''$ ; in the smallest,  $3' 56''$ , nearly. But when the apogee of the moon is without the octants, it becomes less, and is to the greatest equation, as the sine of double the distance of the moon's apogee from the next syzygy, or quadrature, to the radius.

From the same theory of gravity it follows, that the sun's action on the moon is somewhat greater when a right line, drawn through the moon's nodes, passes through the sun, than when that line is at right angles with another joining the sun and earth: and hence arises another equation of the moon's mean motion, which he calls *secunda semestris*, and which is greatest when the nodes are in the sun's octants, and vanishes when they are in the syzygies, or quadratures; and in other situations of the nodes, is proportionable to the sine of double the distances of either node from the next syzygy, or quadrature.

It is added to the moon's mean motion while the nodes are in their passage from the sun's quadratures to the next syzygy, and subtracted in their passage from the syzygies to the quadratures in the octants.

When it is greatest, it amounts to  $47''$ , at a mean distance of the earth from the sun; as it appears from the theory of gravity; at other distances of the sun, this equation in the octants of the nodes is reciprocally as the cube of the sun's distance from the earth; and therefore in the sun's perigee is  $45''$ ; in his apogee nearly  $49''$ .

By the same theory of gravity the moon's apogee proceeds the fastest when either in conjunction with the sun, or in opposition to it; and is retrograde when in quadrature with the sun. In the former case, the eccentricity is greatest, and in the latter smallest. These inequalities are very considerable, and generate the principal equation of the apogee, which he calls *semestris*, or *semimenstrual*. The greatest semimenstrual equation is about  $12^{\circ} 18'$ .

Horrox first observed the moon to revolve in an ellipsis round the earth placed in the lower umbilicus: and Halley placed the centre of the ellipsis in an epicycle, whose centre revolves uniformly about the earth: and from the motion in the epicycle arise the inequalities now observed in the

progress and regress of the apogee, and the quantity of the eccentricity.

Suppose the mean distance of the moon from the earth divided into 100,000; and let T (Plate XVII. *Astronomy*, fig. 12.) represent the earth, and TC the mean eccentricity of the moon 5505 parts; produce TC to B, that CB may be the sine of the greatest semimenstrual equation  $12^{\circ} 18'$ , to the radius TC; the circle BDA, described on the centre C, with the interval CB, will be the epicycle wherein the centre of the lunar orb is placed, and wherein it revolves according to the order of the letters BDA. Take the angle BCD equal to double the annual argument, or double the distance of the true place of the sun from the moon's apogee once equated, and CTD will be the semimenstrual equation of the moon's apogee; and TD the eccentricity of its orbit tending to the apogee equated a second time. From hence the moon's mean motion, apogee, and eccentricity, as also the greater axis of its orbit 200,000, the moon's true place, as also her distance from the earth, are found, and that by the most common methods. In the earth's perihelion, by reason of the greater force of the sun, the centre of the moon's orbit will move more swiftly about the centre C than in the aphelion, and that in a triplicate ratio of the earth's distance from the sun inversely. By reason of the equation of the centre of the sun, comprehended in the annual argument, the centre of the moon's orbit will move more swiftly in the epicycle BDA, in a duplicate ratio of the distance of the earth from the sun inversely.

That the same may still move more swiftly in a simple ratio of the distance inversely from the centre of the orbit D, draw DE towards the moon's apogee, or parallel to TC; and take the angle EDC equal to the excess of the annual argument, above the distance of the moon's apogee from the sun's perigee in consequentia; or, which is the same thing, take the angle CDF equal to the complement of the true anomaly of the sun to  $360^{\circ}$ ; and let DF be to DC as double the eccentricity of the *orbis magnus* to the mean distance of the sun from the earth, and the mean diurnal motion of the sun from the moon's apogee, to the mean diurnal motion of the sun from its own apogee, conjunctly, i. e. as  $33\frac{1}{2}$  is to 1000, and  $52' 27'' 16'''$  to  $59' 8'' 10'''$ , conjunctly; or as 3 to 100. Conceive the centre of the moon's orbit placed in the point F, and to revolve in an epicycle, whose centre is D, and its radius DF, while the point D proceeds in the circumference of the circle DABD: thus the velocity, with which the centre of the moon's orbit moves in a certain curve, described about the centre C, will be reciprocally as the cube of the sun's distance from the earth.

The computation of this motion is difficult; but it will be made easy by the following approximation: if the moon's mean distance from the earth be 100,000 parts, and its eccentricity TC 5505 of those parts, the right line CB or CD will be found 11723, and the right line DF 351. This right line, at the distance TC, subtends an angle to the earth, which the transferring of the centre of the orbit from the place D to F generates in the motion of this centre; and the same right line doubled, in a parallel situation, at the distance of the upper umbilicus of the moon's orbit from the earth, subtends the same angle, generated by that translation in the motion of the umbilicus; and at the distance of the moon from the earth subtends an angle, which the same translation generates in the motion of the moon; and which may therefore be called the *second equation of the centre*.

This equation of a mean distance of the moon from the earth, is as the sine of the angle contained between the right



line DF, and a right line drawn from the point F to the moon, nearly; and when greatest, amounts to  $2' 25''$ . Now the angle comprehended between the right line DF and a line from the point D, is found either by subtracting the angle EDF from the mean anomaly of the moon, or by adding the moon's distance from the sun to the distance of the moon's apogee from the apogee of the sun. And as radius is to the sine of the angle thus found, so is  $2' 25''$  to the second equation of the centre; which is to be added, if that sine be less than a semicircle; and subtracted, if greater: thus we have its longitude in the very syzygies of the luminaries.

If a more accurate computation be required, the moon's place thus found must be corrected by a second variation. The first and principal variation we have already considered, and have observed it to be greatest in the octants. The second is greatest in the quadrants, and arises from the different action of the sun on the moon's orbit, according to the different position of the moon's apogee to the sun, and is thus computed; as radius is to the versed sine of the distance of the moon's apogee from the sun's perigee, in consequence, so is a certain angle P to a fourth proportional. And as radius is to the sine of the moon's distance from the sun, so is the sum of this fourth proportional and another angle Q to the second variation; which is to be subtracted, if the moon's light be increasing; and added, if diminishing.

Thus we have the moon's true place in her orbit; and by reduction of this place to the ecliptic, we have the moon's longitude. The angles P and Q are to be determined by observation in the mean time, if for P be assumed 2, and for Q 1', we shall be near the truth.

The results of computations of this kind are rendered more accurate, in consequence of modern discoveries; and the labour of them is in a great measure superseded by the valuable lunar tables, which the astronomer has now in his possession. We shall therefore refer for these tables to the Nautical Almanack, and to Vince's Complete Astronomy, vol. iii.

*Moon's Path with respect to the Sun, Figure of the.* The path of the moon is concave towards the sun throughout.

In other secondary planets, as the satellites of the superior planets, that part of the path of these satellites which is nearest the sun, is convex towards the sun, and the rest is concave. And we often find in elementary treatises of astronomy, the moon's path represented in the same manner; that is, as partly convex and partly concave towards the sun: but this is a mistake. For it is to be observed, in general, that the force which bends the course of the satellite into a curve, when the motion is referred to an immoveable plane, is, at the conjunction, the difference of its gravity towards the sun, and of its gravity towards the primary. When the former prevails over the latter, the force that bends the course of the satellite tends towards the sun; and, consequently, the concavity of the path is towards the sun; and this is the case of the moon. When the gravity towards the primary exceeds the gravity towards the sun, at the conjunction, then the force which bends the course of the satellite tends towards the primary, and therefore towards the opposition of the sun; consequently the path is there convex toward the sun; and this is the case of the satellites of Jupiter. When these two forces are equal, the path has, at the conjunction, what mathematicians call a point of rectitude; in which case, however, the path is concave towards the sun throughout.

If, indeed, the earth had no annual motion, the moon's motion round the earth, and her track in open space, would

be always the same. But as the earth and moon move round the sun, the moon's real path in the heavens is very different from her visible path round the earth; the latter being in a progressive circle, and the former in a curve of different degrees of concavity, which would be always the same in the same parts of the heavens, if the moon performed a complete number of lunations in a year, without any fractions.

Mr. Ferguson has suggested the following familiar idea of the earth's and moon's path. Let a nail in the end of a chariot-wheel represent the earth, and a pin in the nave the moon: if the body of the chariot be propped up, so as to keep that wheel from touching the ground, and the wheel be then turned round by hand, the pin will describe a circle both round the nail, and in the space it moves through. But if the props be taken away, the horses put to, and the chariot driven over a piece of ground which is circularly convex; the nail in the axle will describe a circular curve, and the pin in the nave will still describe a circle round the progressive nail in the axle, but not in the space through which it moves. In this case, the curve described by the nail will resemble in miniature as much of the earth's annual path round the sun, as it describes whilst the moon goes as often round the earth as the pin does round the nail; and the curve described by the nail will have some resemblance to the moon's path during so many lunations.

Let us now suppose that the radius of the circular curve, described by the nail in the axle, is to the radius of the circle, which the pin in the nave describes round the axle, as  $337\frac{1}{2}$  to 1; which is the proportion of the radius or semidiameter of the earth's orbit to that of the moon's; or of the circular curve A 1 2 3 4 5 6 7 B, &c. (*Plate XVII. Astronomy, fig. 10.*) to the little circle *a*, and then, whilst the progressive nail describes the said curve from A to E, the pin will go once round the nail, with regard to the centre of its path, and, in so doing, will describe the curve *abcde*. The former will be a true representation of the earth's path for one lunation, and the latter of the moon's for that time. Here we may set aside the inequalities of the moon's motion, and also the earth's moving round its common centre of gravity, and the moon's: all which, if they were truly copied in this experiment, would not sensibly alter the figure of the paths described by the nail and pin, even though they should rub against a plain upright surface all the way, and leave their tracks visible upon it. And if the chariot was driven forward on such a convex piece of ground, so as to turn the wheel several times round, the track of the pin in the nave would still be concave toward the centre of the circular curve described by the pin in the axle; as the moon's path is always concave to the sun in the centre of the earth's annual orbit.

In this diagram, the thickest curve line A B C D E, with the numeral figures set to it, represents as much of the earth's annual orbit as it describes in 32 days from west to east; the little circles at *a, b, c, d, e*, shew the moon's orbit in due proportion to the earth's; and the smallest curve *abcdef* represents the line of the moon's path in the heavens for 32 days, accounted from any particular new moon at *a*.

The sun is supposed to be in the centre of the curve A 1 2 3 4 5 6 7 B, &c. and the small dotted circles upon it represent the moon's orbit, of which the radius is in the same proportion to the earth's path, in this scheme, that the radius of the moon's orbit, in the heavens, bears to the radius of the earth's annual path round the sun; that is, as 240,000 to 81,000,000, or as 1 to  $337\frac{1}{2}$ .

When the earth is at A, the new moon is at *a*; and in the seven days that the earth describes the curve 1 2 3 4 5 6 7, the



the moon, in accompanying the earth, describes the curve  $ab$ ; and is in her first quarter at  $b$ , when the earth is at  $B$ . As the earth describes the curve  $B891011121314$ , the moon describes the curve  $bc$ ; and is at  $c$ , opposite to the sun, when the earth is at  $C$ . Whilst the earth describes the curve  $1516171819202122$ , the moon describes the curve  $cd$ ; and is in her third quarter at  $d$ , when the earth is at  $D$ . And, lastly, whilst the earth describes the curve  $D23242526272829$ , the moon describes the curve  $de$ ; and is again in conjunction at  $e$  with the sun, when the earth is at  $E$ , between the 29th and 30th day of the moon's age, accounted by the numeral figures from the new moon at  $A$ . In describing the curve  $abcde$ , the moon goes round the progressive earth as really as if she had kept in the dotted circle  $A$ , and the earth continued immoveable in the centre of that circle.

And thus we see, that although the moon goes round the earth in a circle, with respect to the earth's centre, her real path in the heavens is not very different in appearance from the earth's path. To shew that the moon's path is concave to the sun, even at the time of change, it is carried on a little farther into a second lunation, as to  $f$ .

The moon's absolute motion from her change to her first quarter, or from  $a$  to  $b$ , is so much slower than the earth's, that she falls 240,000 miles, (equal to the semi-diameter of her orbit) behind the earth at her first quarter in  $b$ , when the earth is in  $B$ ; that is, she falls back a space equal to her distance from the earth. From that time her motion is gradually accelerated to her opposition or full at  $c$ , and then she is come up as far as the earth, having regained what she lost in her first quarter from  $a$  to  $b$ . From the full to the last quarter at  $d$ , her motion continues accelerated, so as to be just as far before the earth at  $d$ , as she was behind it at her first quarter in  $b$ . But from  $d$  to  $e$  her motion is so retarded, that she loses as much with respect to the earth, as is equal to her distance from it, or to the semi-diameter of her orbit; and by that means she comes to  $e$ , and is then in conjunction with the sun, as seen from the earth at  $E$ . Hence we find, that the moon's absolute motion is slower than the earth's, from her third quarter to her first; and swifter than the earth's, from her first quarter to her third: her path being less curved than the earth's in the former case, and more in the latter. Yet it is still bent the same way towards the sun; for if we imagine the concavity of the earth's orbit to be measured by the length of a perpendicular line  $Cg$ , let down from the earth's place upon the straight line  $bgd$ , at the full of the moon, and connecting the places of the earth at the end of the moon's first and third quarters, that length will be about 640,000 miles; and the moon, when new, only approaching nearer to the sun, by 240,000 miles, than the earth is, the length of the perpendicular let down from her place, at that time, upon the same straight line, and which shews the concavity of that part of her path, will be about 400,000 miles.

The gravity of the moon towards the sun has been found to be greater, at her conjunction, than her gravity towards the earth, so that the point of equal attraction, where those two powers would sustain each other, falls then between the moon and earth; and since the quantity of matter in the sun is almost 230,000 times as great as the quantity of matter in the earth, and the attraction of each body diminishes as the square of the distance from it increases, it may be easily found, that this point of equal attraction between the earth and the sun, is about 70,000 times nearer the earth than the moon is at her change: whence some, and particularly Mr. Baxter, author of *Matho*, have apprehended, that either the parallax of the sun is very different

from that which is assigned by astronomers, or that the moon ought necessarily to abandon the earth; because she is considerably more attracted by the sun than by the earth at that time. This apprehension may be removed easily, by attending to what has been shewn by sir Isaac Newton, and is illustrated by vulgar experiments concerning the motions of bodies about one another, that are all acted upon by a third force in the same direction. Their relative motions not being in the least disturbed by this third force, if it act equally upon them in parallel lines; as the relative motions of the ships in a fleet, carried away by a current, are no way affected by it, if it act equally upon them; or as the rotation of a bullet or bomb, about its axis, while it is projected in the air; or the figure of a drop of falling rain, are not at all affected by the gravity of the particles of which they are made up towards the earth. The moon is so near the earth, and both of them so far from the sun, that the attractive power of the sun may be considered as equal on both; and, therefore, the moon will continue to circulate round the earth in the same manner as if the sun did not attract them at all. It is to the inequality of the action of the sun upon the earth and moon, and the want of parallelism in the directions of these actions, only, that we are to ascribe the irregularities in the motion of the moon.

But it may contribute farther towards removing this difficulty to observe, that if the absolute velocity of the moon, at the conjunction, was less than that which is requisite to carry a body in a circle there around the sun, supposing this body to be acted on by the same force which acts there on the moon, (*i. e.* by the excess of her gravity towards the sun, above her gravity towards the earth,) then the moon would, indeed, abandon the earth. For, in that case, the moon having less velocity than would be necessary to prevent her from descending within that circle, she would approach to the sun, and recede from the earth. But though the absolute velocity of the moon, at the conjunction, be less than the velocity of the earth in the annual orbit, yet her gravity towards the sun is so much diminished, by her gravity towards the earth, that her absolute velocity is still much superior to that which is requisite to carry a body in a circle there about the sun, that is acted on by the remaining force only. Therefore, from the moment of the conjunction, the moon is carried without such a circle, receding continually from the sun to greater and greater distances, till she arrives at the opposition; where, being acted on by the sum of those two gravities, and her velocity being now less than what is requisite to carry a body in a circle there about the sun, that is acted on by a force equal to that sum, the moon thence begins to approach to the sun again. Thus she recedes from the sun, and approaches to it by turns, and in every month her path hath two apses, a perihelion at the conjunction, and an aphelion at the opposition; between which she is always carried in a manner similar to that in which the primary planets revolve between their apses. The planet recedes from the sun at the perihelion, because its velocity there is greater than that with which a circle could be described about the sun, at the same distance, by the same centripetal force; and approaches towards the sun from the aphelion, because its velocity there is less than is requisite to carry it in a circle, at that distance, about the sun.

If we suppose the earth to revolve in a circular orbit round the sun as its centre, and the moon to revolve round the earth in the same manner; the planes of their orbits to coincide; the diameters of their orbits to be as 340 to 1; and the moon to perform 13,368 revolutions to every single revolution of the earth; it is easy to investigate the nature and



and description of the curve generated by the centre of the moon; and to determine whether this curve, in one lunation, be any where convex towards the sun.

Let  $S$  (fig. 11.) represent the sun;  $E$  the earth;  $E\epsilon$  an arc of the orbit of the earth passed over by its centre, in one lunation of the moon; the circumference of the circle  $EAF$  = the concentric arc  $A\alpha$ ; then, (because  $13,368 - 1 = 12,368$  = the number of lunations in the year, or one revolution of the earth, and therefore  $SA : EA :: 12,368 : 1$ .) when the moon is in conjunction with the sun, the distance between the sun and moon will be greater than the distance or radius  $SA$ . Now the curve, described by the centre of the moon, is the same as that described by a point  $M$  ( $EM$  being the semi-diameter of the moon's orbit), carried round by the rotation of the circle  $EAF$  on the arc  $A\alpha$ : it is therefore of the cycloidal kind, having a point of inflexion, if every cycloid, described by a point within the generating circle, is inflected, as well upon a circular as upon a rectilinear base. To determine which,

Put  $SbA$  or  $SR = a$ ,  $E.A$  or  $eR = b$ ,  $EM$  or  $em = c$ ,  $Rm = r$ ,  $Rd = s$ ; and let  $mC$  be the radius of curvature at any point  $m$ , which, it is evident, must pass through the point of contact  $R$ . Suppose the point  $n$  indefinitely near to  $m$ ; then,  $Rr$  and  $Rr$  being the indefinitely small contemporary arcs with  $mn$ , and, consequently, the triangles  $Rmr$  and  $Rnr$  equal in all respects; if we consider the said little arcs  $Rr$  and  $Rr$  as little right lines perpendicular to the radii  $er$  and  $Sr$ , we shall have the  $\angle mRn = \angle rRr$  = (because the angles  $eRr$  and  $SrR$ , added to either side of the equation, make it two right angles)  $\angle Rer + \angle Rsr$ . Now  $SR : eR :: \angle Rer : \angle Rsr$ , and  $SR : SR + Re :: \angle Rer : \angle Rsr$ , that is,  $a : a + b :: \angle Rer : \angle mRn = \frac{a+b}{a} < Rer$ . Again, in any triangle, as  $dmr$ , if the angles  $mDr$ ,  $mrd$ , and  $Rmr$ , the complement of the obtuse angle to two right angles, be indefinitely small, they will be proportional to the opposite sides  $mr$ ,  $md$ , and  $dr$ ; that is,  $dr : md :: \angle Rmr : \angle mrd$ ; and  $dr - md : dr :: \angle Rmr - \angle mrd : \angle Rmr$ , that is,  $R : dR :: \angle Rdr : \angle Rnr$ , or,  $r : s :: \frac{1}{2} < Rer : \angle Rnr =$

$\frac{s}{2r} < Rer$ . And again,  $\angle RCn : \angle RnC :: Rn : RC$ , that is,  $\angle mRn - \angle Rnr : \angle Rnr :: Rm : RC$ , or  $\frac{a+b}{a} - \frac{s}{2r} < Rer : \frac{s}{2r} < Rer :: r : RC$ .  

$$= \frac{ars}{2ar + 2br - s}$$
 Consequently,  $mR + RC = mC$   

$$= \frac{2ar^2 + 2br^2}{2ar + 2br - as} = \frac{r^2}{r - \frac{as}{2a + 2b}}$$
 = the radius of

curvature at any point  $m$ .

Now, it is evident, that, at the point of inflexion, the radius of curvature must be infinite: or that, on one side of the said point, the expression for the radius of curvature must be affirmative, and on the other negative; therefore,

$r$  must be more than  $\frac{as}{2a + 2b}$  on one side of the said point,

and on the other less; and, consequently, at the point of inflexion,  $r = \frac{as}{2a + 2b}$ ; which, substituted for  $r$ , makes

$(dm \times mR) = rs - r^2 = \frac{2abs^2 + a^2s^2}{2a + 2b} =$  (because  $dm \times mR = fm \times ma = b^2 - c^2$ ; from which equation we have  $s = \frac{2a + 2b \sqrt{b^2 - c^2}}{\sqrt{2ab + a^2}}$ . Or, to find  $r$ , say  $2ar + 2br = as$ , or  $s = \frac{2ar + 2br}{a}$ ; then  $(dm \times mR) = rs - r^2 = \frac{ar^2 + 2br^2}{a} = (fm \times ma = b^2 - c^2$ ; which equation gives  $r = \sqrt{\frac{ab^2 - ac^2}{a + 2b}}$ , when the point  $m$  becomes a point of inflexion.

Now, as  $mR(r)$  must, by the nature of the circle, always be greater than  $ma$ ; that is, as  $\sqrt{\frac{ab^2 - ac^2}{a + 2b}}$  must always be more than  $b - c$ ; and, consequently,  $\frac{ab^2 - ac^2}{a + 2b}$  be more than  $(b - c)^2$ , that is,  $\frac{ab + ac}{a + 2b} \times b - c$  be more than  $b - c \times b - c$ ; therefore,  $c$  must always be more than  $\frac{b^2}{a + b}$ ; that is,  $EM$  must be more than a third proportional to  $ES$  and  $EA$ , in order to have a point of inflexion take place in the curve: but in the present case,  $ES$ ,  $EA$ , and  $EM$ , being as  $13.368.1$ , and  $\frac{13.368}{340}$ , or  $.039$ ; therefore  $EM$  is less than the said third proportional; and, consequently, the curve  $Mm\mu$ , generated by the centre of the moon, has not a point of inflexion, or is no where convex towards the sun. See Ferguson's Astronomy, p. 129, &c. Maclaurin's Account of Sir Isaac Newton's Phil. Disc. book. iv. ch. 5. p. 336, &c. 4to. Rowe's Fluxions, p. 127, &c.

MOON, *Astronomy of the*. 1. To determine the period of the moon's revolution round the earth, or the *periodical* month; and the time between one opposition and another, or the *synodical* month.

Since in the middle of a lunar eclipse the moon is opposite to the sun, compute the time between two eclipses, or oppositions, between which there is a great interval of time; and divide this by the number of lunations that have passed in the mean time; the quotient will be the quantity of the synodical month. Compute the sun's mean motion, during the time of the synodical month, and add this to the entire circle described by the moon. Then, as the sun is to  $360^\circ$ , so is the quantity of the synodical month to the periodical.

Thus, Copernicus, in the year 1500, November 6, at twelve at night, observed an eclipse of the moon at Rome; and August 1, 1523, at 4<sup>h</sup> 25', another at Cracow: hence the quantity of the synodical month is thus determined:

Obs. 2 An. 1523<sup>d</sup> 237<sup>h</sup> 4.25'

Obs. 1 An. 1500 310 2.20

Interval of time An. 22<sup>d</sup> 292<sup>h</sup> 2.5'

Add the intercalary days 5

Exact interval An. 22<sup>d</sup> 297<sup>h</sup> 2.5'

or

11991005'

Which, divided by 282 months, elapsed in the mean time, gives the quantity of the synodical month 42521' 9" 9''' ; that is, 29<sup>d</sup> 12<sup>h</sup> 41'.

From

# MOON.

From two other observations of eclipses, the one at Cracow, the other at Babylon, the same author determines more accurately the quantity of the synodical month to be

$$29^d 12^h 44^m 3^s$$

That is,  $29^d 11^h 43^m 3^s 10''$ . But this is less than the true synodical month, which is  $29^d 12^h 44^m 3^s$ .

The sun's mean motion in the time  $29^d 6^h 24^m 18''$

The moon's motion - - -  $389^d 6^h 24^m 18''$

Quantity of the periodical month  $27^d 7^h 43^m 5''$

Hence, 1. The quantity of the periodical month being given, by the rule of three we may find the moon's diurnal and horary motion; &c. And thus may tables of the mean motion of the moon be constructed.

2. If the sun's mean diurnal motion be subtracted from the moon's mean diurnal motion, the remainder will give the moon's diurnal motion from the sun: and thus may a table thereof be constructed.

3. Since, in the middle of a total eclipse, the moon is in the node, if the sun's place be found for that time, and to this be added six signs, the sum will give the place of that node.

4. From comparing the ancient observations with the modern, it appears, that the nodes have a motion, and that they proceed in *antecedentia*, i. e. from Taurus to Aries, from Aries to Pisces, &c. If, then, to the moon's mean diurnal motion be added the diurnal motion of the nodes, the same will be the motion of the moon from the node; and thence, by the rule of three, may be found in what time the moon goes  $360^\circ$  from the dragon's head, or in what time she goes from, and returns to it: that is, the quantity of the *draconic* month.

5. If the motion of the apogee be subtracted from the mean motion of the moon, the remainder will be the moon's mean motion from the apogee; and thence, by the rule of three, is determined the quantity of the *anomalistic* month. See the preceding part of this article.

To find the Moon's Age or Change.—The following canon, in which the twelve numbers answer to the twelve months, beginning with January, will serve for this purpose.

Janus 0, 2, 1, 2, 3, 4, 5, 6,

8, 8, 10, 10, these to the epact fix,

The sum, bate 30, to the month's day add,

Or take from 30, age or change is had.

The reason of adding these numbers to the epact in the several months, is because the lunar synodical months fall short of the calendar months; so that the epact, which expresses how much the lunar year falls short of the solar, or calendar year, must be considered as continually increasing; and, therefore, to find the new moons, which are the beginnings of the synodical months, an addition must be made to the epact in every month, and more and more as the year advances; which additional numbers are called the menstrual epacts. Only nothing is to be added to the epact in January, because the annual epact, together with the day of the month, does then express the true age of the moon: but as January has 31 days, which is near 2 days more than a synodical month, therefore the beginning of the lunar month in February will fall 2 days sooner than it did in January; consequently 2 is the menstrual epact of February; and then, as February has but 28, or at most 29, days, which may be accounted 1 day less than a synodical month, the next lunar month will begin 1 day later in March than it did in February; consequently the menstrual epact of March decreases instead of increasing, and is but 1. If from thence you reckon the lunar months to consist of 30 days and 29 interchangeably, the new moons will fall so much earlier in the following months than the new moon did in January, as is expressed by the menstrual

epacts in the canon, viz. 2 days in April, 3 in May, &c. until they amount to 11 days at the end of the year, which are then added to the annual epact.

TABLE I.—Epacts of Years.

Years.	Epacts.	Years.	Epacts.
B. 1804	18 <sup>1</sup> 13 <sup>h</sup> 37'	B. 1844	10 <sup>d</sup> 22 <sup>h</sup> 14'
1805	29 4 59	1845	21 13 26
1806	10 7 16	1846	2 15 53
1807	20 22 27	1847	13 7 4
B. 1808	3 0 55	B. 1848	24 22 16
1809	13 16 6	1849	6 0 43
1810	24 7 18	1850	16 15 55
1811	5 9 45	1851	27 7 6
B. 1812	17 0 57	B. 1852	9 9 34
1813	27 16 8	1853	20 0 45
1814	8 18 35	1854	1 3 12
1815	19 9 47	1855	11 18 24
B. 1816	1 12 14	B. 1856	23 9 35
1817	12 3 26	1857	4 12 2
1818	22 18 37	1858	15 3 14
1819	3 21 4	1859	25 17 26
B. 1820	15 22 16	B. 1860	7 20 53
1821	26 3 27	1861	18 12 4
1822	7 5 55	1862	29 3 16
1823	17 21 6	1863	10 5 43
B. 1824	29 12 18	B. 1864	21 20 55
1825	10 14 45	1865	2 23 22
1826	21 5 57	1866	13 14 33
1827	2 8 24	1867	24 5 45
B. 1828	13 23 35	B. 1868	6 8 12
1829	24 14 47	1869	16 23 24
1830	5 17 14	1870	27 14 55
1831	16 8 26	1871	8 17 3
B. 1832	27 23 37	B. 1872	20 8 14
1833	9 2 4	1873	1 10 42
1834	19 17 16	1874	12 1 53
1835	0 19 43	1875	22 17 4
B. 1836	12 10 55	B. 1876	4 20 32
1837	23 2 6	1877	15 10 43
1838	4 4 34	1878	26 1 55
1839	14 19 45	1879	7 4 22
B. 1840	26 10 56	B. 1880	18 19 33
1841	7 13 24	1881	29 10 45
1842	18 4 35	1882	10 13 12
1843	28 19 47	1883	21 4 24

TABLE II.—Epacts of Months.

Months.	Epacts.	Months.	Epacts.
January	0 <sup>d</sup> 0 <sup>h</sup> 0'	July	3 <sup>d</sup> 19 <sup>h</sup> 36'
February	1 11 16	August	5 6 52
March	29 11 16	September	6 18 8
April	1 9 48	October	7 5 24
May	1 21 4	November	8 16 40
June	3 8 20	December	9 3 55

In leap years, a day is to be subtracted from the sum of the epacts, in the months of January and February.



## MOON.

TABLE III.—To find the Moon's Age by Inspection.

Months									Years.											
Jan.	Feb.	Mar.	May.	June.	July.	Aug.	Sept.	Nov.												
	April.						O&.	Dec.												
Days.									Moon's Age.											
1 31	29 30	30 31	28 29 30	27 28 29 30	26 27 28 29 30	25 26 27 28 29 30	23 24 25 26 27 28 29 30	22 23 24 25 26 27 28 29 30	5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	16 27 28 29 N 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	27 28 29 N 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	18 19 20 21 22 23 24 25 26 27 28 29 N	29 N 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	10 21 22 23 24 25 26 27 28 29 N	2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N	24 25 26 27 28 29 N 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 N		
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*Explanation of the Tables.*—By Tables I. and II. the mean age of the moon, at any given time, may be found to the nearest minute, by adding the epacts of the given year and month, and the proposed time reduced to the meridian of Greenwich. If this sum exceeds a mean lunation, or  $29^d 12^h 44'$ , deduct it therefrom. The mean time of new moon is found by subtracting the sum of the epacts of the given year and month, from  $29^d 12^h 44'$ ; but if greater than that quantity, subtract it from  $59^d 1^h 29'$ , to which add the longitude, in time, if east, but subtract it if west. The mean time of the preceding, or following full moon, is found by subtracting, or adding  $14^d 18^h 22'$ ; and the quarters, by applying  $7^d 9^h 11'$ . See *EPACT* and *Metonic CYCLE*.

By Table III. the moon's age is found by inspection only, from the year 1800 until 1894, inclusive; and the method of extending it a few years before or after the limits of the table is obvious.

This table is divided into two parts; the first of which contains the months and days, and the other the years, with the moon's age. In this last part, N stands for new moon, and F for full moon. In order, therefore, to find the moon's age on any given day of any given year, within the limits of the table, find the proposed day under the given month, then, on the same horizontal line, and under the given year, is the moon's age required. Thus, March 12th, 1869, it is a new moon, and on the 18th of the same month, in the year 1878, it is full moon.

The epact for any given year within the limits of the table, is found at the bottom of the column immediately under the given year. Thus the epact for the year 1850 is 17. Mackay's Complete Navigator.

*To find the Time of the Moon's being in the Meridian, or South.*—Multiply her age by 4, and divide the product by 5: the quotient gives the hour, and the remainder, multiplied by 12, the minute.

The reason of this rule is, that as the moon at the change comes to the south with the sun, or at twelve o'clock, and as there are thirty days, nearly, from one new moon to another, and twenty-four hours in a day; therefore she loses one day with another  $\frac{2}{3}$ ths, or  $\frac{4}{3}$ ths of an hour in the time of her southing: now the moon's age, a number of days from the change, being multiplied by four, the product is so many fifths of an hour as she has lost, which, divided by five, is reduced to hours, and the remainder, if any, multiplied by 12, will be minutes.

MOON, *For the Eclipses of the*, see ECLIPSES.

*For the MOON's Parallax*, see PARALLAX.

MOON, *Nature and Furniture of the*. 1. From the various phases of the moon: from her only shewing a little part illumined, when following the sun ready to set: from that part's increasing as she recedes from the sun, till at the distance of  $180^\circ$  she shines with a full face: and again wanes as she re-approaches that luminary, and loses all her light when she meets him: from the lucid parts being constantly turned towards the west, while the moon increases; and towards the east when she decreases: it is evident, that only that part shines on which the sun's rays fall. And, from the phenomena of eclipses happening when the moon should shine with a full face; viz. when she is  $180^\circ$  distant from the sun; and the darkened parts appearing the same in all places; it is evident she has no light of her own, but borrows whatever light she has from the sun; for if she did, being globular, we should always see her with a round full orb, like the sun.

2. The moon sometimes disappears in a clear heaven, so

as not to be discoverable by the best glasses; little stars of the fifth and sixth magnitude all the time remaining visible. This phenomenon Kepler observed twice, anno 1580 and 1583, and Hevelius in 1620. Ricciolus, and other Jesuits at Bologna, and many people throughout Holland, observed the like April 14, 1642, yet at Venice and Vienna she was all the time conspicuous. December 23, 1703, there was another total obscuration. At Arles she first appeared of a yellowish-brown; at Avignon ruddy and transparent, as if the sun had shone through; at Marseilles, one part was reddish, the other very dusky; and, at length, though in a clear sky, she wholly disappeared. Here it is evident that the colours appearing different at the same time, do not belong to the moon; but they are probably occasioned by our atmosphere, which is variously disposed, at different times, for refracting of these or those coloured rays.

3. The eye, either naked, or armed with a telescope, sees some parts in the moon's face darker than others, which are called *macule*, or *spots*. Through the telescope, while the moon is either increasing or decreasing, the illumined parts in the maculæ appear evenly terminated; but in the bright parts, the boundary of the light appears jagged and uneven, composed of dissimilar arches, convex and concave. (See *Plate XVII. Astron. fig. 13.*) There are also observed lucid parts dispersed among the darker; and illumined parts are seen beyond the limits of illumination; other intermediate ones remaining still in darkness; and near the maculæ, and even in them, are frequently seen such lucid specks. Beside the maculæ observed by the ancients, there are other variable ones, invisible to the naked eye, called *new maculæ*, always opposite to the sun; and which are hence found among those parts which are the soonest illumined in the increasing moon, and in the decreasing moon lose their light later than the intermediate ones; running round, and appearing sometimes longer sometimes smaller.

Hence, 1. As all parts are equally illumined by the sun, inasmuch as they are equally distant from him: if some appear brighter, and others darker; some reflect the sun's rays more copiously than others; and therefore they are of different natures. And, 2. Since the boundary of the illumined part is very smooth and equable in the maculæ, their surface must be so too. 3. The parts illumined by the sun sooner, and deserted later, than others that are nearer, are higher than the rest; i.e. they stand up above the other surface of the moon. 4. The new maculæ answer perfectly to the shadows of terrestrial bodies.

4. Hevelius writes, that he has several times found, in skies perfectly clear, when even stars of the sixth and seventh magnitude were conspicuous, that at the same altitude of the moon, and the same elongation from the earth, and with one and the same excellent telescope, the moon and its maculæ do not appear equally lucid, clear and perspicuous, at all times; but are much brighter, purer, and more distinct, at one time than another. From the circumstances of the observation, it is evident the reason of this phenomenon is not either in our air, in the tube, in the moon, or in the spectator's eye; but it must be looked for in something existing about the moon.

5. Cassini frequently observed Saturn, Jupiter, and the fixed stars, when hid by the moon, near her limb, whether the illumined or dark one, to have their circular figure changed into an oval one; and in other occultations he found no alteration of figure at all. In like manner, the sun and moon rising and setting in a vaporous horizon, do not appear circular, but elliptical.

Hence, as we know, by sure experience, that the circular figure of the sun and moon is only changed into an elliptical



tical one by means of the refraction in the vapoury atmosphere; some have concluded, that at the time when the circular figure of the stars is thus changed by the moon, there is a dense matter encompassing the moon, wherein the rays, emitted from the stars, are refracted; and that, at other times, when there is no change of figure, this matter is wanting.

This phenomenon is well illustrated by the following experiment.

To the inner bottom of any vessel, either plain, convex, or concave, with wax fasten a circle of paper; then pouring in water, that the rays, reflected from the circle in the air, may be refracted before they reach the eye; viewing the circle obliquely, the circular figure will appear changed into an ellipsis.

6. The moon, then, is a dense opaque body, furnished with mountains and vallies. That the moon is dense and impervious to the light, has been shewn: but some parts sink below, and others rise above the surface; and that considerably, inasmuch as they are visible at so great a distance as that of the earth from the moon; whence it has been concluded that in the moon there are high mountains, and very deep vallies. Ricciolus measured the height of one of the mountains, called St. Catharine, and found it (as he conceived) nine miles high. The method of measuring the height of the lunar mountains is as follows. Suppose  $E D$  (fig. 14.) the moon's diameter,  $E C D$  the boundary of light and darkness, and  $A$  the top of a hill in the dark part beginning to be illumined: with a telescope and micrometer observe the proportion of  $A E$ , or the distance of  $A$  from the line where the light commences to the diameter  $E D$ ; here we have two sides of a rectangled triangle  $A E$ ,  $C E$ ; the squares of which added together give the square of the third; whence the semi-diameter  $C B$  being subtracted, leaves  $A B$ , the height of the mountain.

Ricciolus, *v. gr.* found the top of the mount St. Catharine illumined at the distance of  $\frac{1}{10}$ th of the moon's diameter from the confines of light. Supposing, therefore,  $C E$  8, and  $A E$  1, the squares of the two will be 65, whose root is 8.062, the length of  $A C$ ; subtracting, therefore,  $B C = 8$ , the remainder is  $A B = 0.062$ . The moon's semi-diameter, therefore, is to the mountain's height as 8 is to 0.062; *i. e.* as 8000 to 62. Supposing, therefore, the semi-diameter of the moon 1182 English miles, by the rule of three we find the height of the mountain 9 miles.

Galileo takes the distance of the top of a lunar mountain from the line that divides the illumined part of the disc from that which is in the shade to be equal to a 20th part of the moon's diameter; but Hevelius affirms, that it is only the 26th part of the same. If we calculate, in the manner above stated, the height of such a mountain, it will be found, in English measure, according to Galileo, almost  $5\frac{1}{2}$  miles; and, according to Hevelius, somewhat more than  $3\frac{1}{2}$  miles, admitting the moon's diameter to be 2180 miles. The observations of Hevelius have been always held in great esteem; and this is probably the reason why later astronomers have not repeated them. M. de la Lande, one of the most eminent modern astronomers, concurs in his sentiments. Mr. Ferguson says, that some of the mountains of the moon, by comparing their height with her diameter, are found to be three times higher than the highest hills on our earth; and Keill, in his "Astronomical Lectures," has calculated the height of St. Catharine's hill, according to the observations of Ricciolus, in the manner above stated, and finds it nine miles. Dr. Herschel, the most accurate as well as industrious observer of modern times, has directed his attention to this subject. He observes, with regard to the method pursued by Hevelius, that it will only

avail when the moon is in her quadratures; for in all other positions, the projection of the hills must appear much shorter than it really is. Let  $S L M$ , or  $s l m$  (fig. 15.) be a line drawn from the sun to the mountain, touching the moon at  $L$  or  $l$ , and the mountain at  $M$  or  $m$ . Then to an observer at  $E$  or  $e$ , the lines  $L M$ , or  $l m$ , will not appear of the same length, though the mountains should be of an equal height; for  $L M$  will be projected into  $o n$ , and  $l m$  into  $O N$ . But these are the quantities that are taken by the micrometer, when we observe a mountain to project from the line of illumination. From the observed quantity  $o n$ , when the moon is not in her quadrature, to find  $L M$  we have the following analogy. The triangles  $o O L$ ,  $r M L$ , are similar; there-

fore,  $L o : L O :: L r : L M$ , or  $\frac{L O \times o n}{L o} = L M$ :

but  $L O$  is the radius of the moon, and  $L r$ , or  $o n$ , is the observed distance of the moon's projection, and  $L o$  is the sine of the angle  $R O L = o L S$ , which we may take to be the distance of the sun from the moon, without any material error, and which, therefore, we may find at any given time from an ephemeris.

*E. G.* On June, 1780, at seven o'clock, Dr. Herschel found the angle under which  $L M$ , or  $L r$  appeared, to be  $40''.625$ , for a mountain in the south-east quadrant; and the sun's distance from the moon was  $125^{\circ} 8'$ , whose sine is .8104; hence,  $40''.625$  divided by .8104, gives  $50''.13$ , the angle under which  $L M$  would appear, if seen directly. Now the semi-diameter of the moon was  $16' 2''.6$ , and taking its length to be 1090 miles, we have  $16' 2''.6 : 50''.13 :: 1090 : L M = 56.73$  miles; hence,  $M p = 1.47$  miles.

The instrument used by Dr. Herschel in his observations was a Newtonian reflector of six feet eight inches focal length, to which a micrometer was adapted consisting of two parallel hairs, one of which was moveable by means of a fine screw. His observations were numerous, and from the result of all, he concludes, that the height of the lunar mountains in general is greatly overrated; and that, with the exception of a few, they do not generally exceed half a mile in their perpendicular elevation. Our author had not an opportunity of particularly observing the three mountains mentioned by Hevelius; nor that which Ricciolus found to project a sixteenth part of the moon's diameter. If Keill, he says, had calculated the height of this hill according to the theorem which he has given, he would have found (supposing the observation to have been made, as he says, on the fourth day after new moon) that its perpendicular height could not well be less than between 11 and 12 miles. Phil. Transf. vol. lxx. pt. 2. art. 29.

The heights, &c. of the lunar mountains being measurable, astronomers have taken occasion to give each its name. Ricciolus, whom most others now follow, distinguished them by the names of celebrated astronomers; and by these names they are still expressed in observations of the lunar eclipses, &c. (See fig. 16.) For an account of the VOLCANOS in the Moon, see that article. See also LUNAR SPOTS,

Astronomers are now generally of opinion, that the moon has no atmosphere of any visible density surrounding her, as we have; for if she had, we could never see her edge so well defined as it appears: but there would be a sort of mist or haziness around her, which would make the stars look fainter, when they are seen through it. But observation proves, that the stars which disappear behind the moon retain their full lustre until they seem to touch her very edge, and then they vanish in a moment. This has been often observed by astronomers, but particularly by Cassini of the star  $\gamma$  in the breast of Virgo, which appears single and round to the bare



eye; but through a refracting telescope of sixteen feet, appears to be two stars so near together, that the distance between them seems to be but equal to one of their apparent diameters. The moon was observed to pass over them on the 21st of April, 1720, N.S. and as her dark edge drew near to them, it caused no change in their colour or situation. At 25 min. 14 sec. past twelve at night, the most westerly of these stars was hid by the dark edge of the moon; and in 30 seconds afterward, the most easterly star was hid: each of them disappearing behind the moon in an instant, without any preceding diminution of magnitude or brightness; which by no means could have been the case if there were an atmosphere round the moon; for then, one of the stars falling obliquely into it before the other, ought by refraction to have suffered some change in its colour, or in its distance from the other star, which was not yet entered into the atmosphere. But no such alteration could be perceived, though the observation was performed with the utmost attention to that particular; and was very proper to have made such a discovery. The faint light, which has been seen all around the moon, in total eclipses of the sun, has been observed, during the time of darkness, to have its centre coincident with the centre of the sun; and was therefore much more likely to arise from the atmosphere of the sun, than from that of the moon; for if it had been owing to the latter, its centre would have gone along with the moon's.

If there were seas in the moon, she could have no clouds, rains, nor storms, as we have; because she has no such atmosphere to support the vapours which occasion them. And every one knows, that when the moon is above our horizon in the night-time, she is visible, unless the clouds of our atmosphere hide her from our view; and all parts of her appear constantly with the same clear, serene, and calm aspect. But those dark parts of the moon, which were formerly thought to be seas, are now found to be only vast deep cavities, and places which reflect not the sun's light so strongly as others, having many caverns and pits whose shadows fall within them, and are always dark on the sides next the sun, which demonstrates their being hollow: and most of these pits have little knobs like hillocks standing within them, and casting shadows also; which cause these places to appear darker than others which have fewer, or less remarkable caverns. All these appearances shew that there are no seas in the moon; for if there were any, their surfaces would appear smooth and even, like those on the earth.

There being no atmosphere about the moon, the heavens in the day time have the appearance of night to a lunarian who turns his back towards the sun; and when he does, the stars appear as bright to him as they do in the night to us. For it is entirely owing to our atmosphere that the heavens are bright about us in the day. Some, however, have suspected that at an occultation of a fixed star by the moon, the star did not vanish instantly; whilst the general opinion has been that which we have above stated. Mr. Schroeter, of Lilienthal, in the duchy of Bremen, has endeavoured to establish the existence of an atmosphere from the following observations. 1. He observed the moon when two days and an half old, in the evening soon after sun-set, before the dark part was visible, and continued to observe it till it became visible. The two cusps appeared tapering in a very sharp, faint prolongation, each exhibiting its farthest extremity faintly illuminated by the solar rays, before any part of the dark hemisphere was visible. Soon after, the whole dark limb appeared illuminated. This prolongation of the cusps beyond the semicircle, he thinks, must arise from the refraction of the sun's rays by the moon's atmosphere. He com-

putes also the height of the atmosphere, which refracts light enough into its dark hemisphere to produce a twilight, more luminous than the light reflected from the earth when the moon is about  $32^\circ$  from the new, to be 1356 Paris feet; and that the greatest height capable of refracting the solar rays is 5376 feet. 2. At an occultation of Jupiter's satellites, the third disappeared, after having been about  $1''$  or  $2''$  of time indistinct; the fourth became indiscernible near the limb; this was not observed of the other two. Phil. Transf. vol. lxxxii. pt. 2. art. 16.

MOON, *As to the Influence of the*, on the changes of our weather, and the constitution of the human body, we shall observe that the vulgar doctrine concerning it is very ancient, and has gained credit among the learned, without sufficient examination; but it is now generally exploded by philosophers, as equally destitute of all foundation in physical theory, and unsupported by any plausible analogy. The common opinion is, that the lunar influence is exerted at the syzygies and quadratures, and for three days before and after each of those epochs. There are twenty-four days, therefore, in each synodic month, over which the moon at this rate is supposed to preside, and as the whole consists but of 29 days,  $12\frac{3}{4}$  hours, only  $5\frac{1}{2}$  days are exempt from her pretended dominion. Hence, though the changes of the weather should happen to have no connection whatever with the moon's aspects, and they should be distributed in an equal proportion through the whole synodic month; yet any one who shall predict, that a change shall happen on some one of the twenty-four days assigned, rather than in any of the remaining  $5\frac{1}{2}$ , will always have the chances 24 to  $5\frac{1}{2}$  in his favour. Men may, therefore, easily deceive themselves, especially in so unsettled a climate as ours. Moreover, the writers who treat of the signs of the weather, derive their prognostics from circumstances, which neither argue any real influence of the moon as a cause, nor any belief of such an influence, but are merely indications of the state of the air at the time of observation: such are, the shape of the horns, the degree and colour of the light, and the number and quality of the luminous circles which sometimes surround the moon, and the circumstances attending their disappearance. (See the *Διοσημια* of Aratus, and the Scholia of Theon.) The vulgar soon began to consider those things as causes, which had been proposed to them only as signs: and the notion of the moon's influence on all terrestrial things was confirmed by her manifest effect upon the ocean. See on this subject, Phil. Transf. vol. lxxv. part 2. p. 178, &c.

The famous Dr. Mead was a believer in the influence of the sun and moon on the human body, and published a book to this purpose, intitled "De Imperio Solis ac Lunæ in Corpore humano:" but this opinion has been exploded by philosophers, as equally unreasonable in itself, and contrary to fact. As the most accurate and sensible barometer is not affected by the various positions of the moon, it is not likely that the human body should be affected by them. See LUNATIC.

MOON, *Harvest*. It is remarkable, that the moon, during the week in which she is full in harvest, rises sooner after sun-setting than she does in any other full-moon week in the year. By doing so, she affords an immediate supply of light after sun-set, which is very beneficial to the farmers for reaping and gathering in the fruits of the earth: and therefore they distinguish *this* full moon from all the others in the year, by calling it the *harvest-moon*. Mr. Ferguson has given a full account of the harvest-moon in his Astronomy; the substance of which is as follows, in a problem on the common celestial globe,



Make chalk-marks all round the globe, on the ecliptic, at  $12\frac{1}{2}$  degrees from each other (beginning at Capricorn) which is equal to the moon's daily mean motion from the sun: then elevate the north pole of the globe to the latitude of any place in Europe; suppose London, whose latitude is  $51\frac{1}{2}$  degrees north.

This done, turn the ball of the globe round, westward, in its frame; and you will see that different parts of the ecliptic make very different angles with the horizon, as these parts rise in the east: and therefore, in equal times, very unequal portions of the ecliptic will rise. About Pisces and Aries, seven of these chalk-marks will rise in little more than two hours, as measured by the motion of the index on the horary circle: but, about the opposite signs, Virgo and Libra, the index will go over eight hours in the times that seven marks will rise. The intermediate signs will more or less partake of these differences as they are more or less remote from those above-mentioned.

Hence it is plain that when the moon is in Pisces and Aries, the difference of her rising will be little more than two hours in seven days; but in Virgo and Libra it will be eight hours in seven days: and this happens every month of the year, because the moon goes through all the signs of the ecliptic in a month, or rather in 27 days, 8 hours.

The moon is always opposite to the sun when she is full, and the sun is never in Virgo and Libra but in our harvest months; and, therefore, the moon is never full in Pisces and Aries (which are the signs opposite to Virgo and Libra) but in our harvest months. Consequently, when the moon is about her full in harvest, she rises with less difference of time, or more immediately after sun-set, than when she is full in any other month of the year. In our winter, the moon is in Pisces and Aries about the time of her first quarter, and rises about noon; but her rising is not then taken notice of, because the sun is above the horizon.

In spring the moon is in Pisces and Aries about the time of her change; and then, as she gives no light, and rises with the sun, her rising cannot be perceived.

In summer, the moon is in Pisces and Aries about the time of her last quarter; and then, as she is on the decrease, and rises not till midnight, her rising generally passes unobserved.

But in harvest, the moon is full in Pisces and Aries (these signs being opposite to the sun in our autumnal months) and rises soon after sun-set for several evenings successively; which makes her regular rising very conspicuous at that time of the year, as it is so beneficial then to the farmers in affording them an immediate supply of light after the going down of the sun.

This would always be the case if the moon's orbit lay in the plane of the ecliptic. But as the moon moves in an orbit which makes an angle of 5 degrees 18 minutes with the ecliptic, and crosses it only in the two opposite points called the nodes, her rising when in Pisces and Aries, will sometimes not differ above an hour and forty minutes through the whole of seven days; and at other times, in the same two signs, she will differ three hours and a half in the time of her rising in a week, according to the different positions of the nodes with respect to these signs; which positions are constantly changing, because the nodes go backward through the whole ecliptic in 18 years and 225 days.

This revolution of the nodes will cause the harvest moons to go through a whole course of the most and least beneficial states with respect to the farmers every nineteen years. The following table shews in what years the harvest moons are least beneficial as to the times of their rising, and in what years most, from 1807 to 1861. The columns of years under the letter L, are those in which the harvest moons are least

of all beneficial, because they fall about the descending node; and those under M are the most of all beneficial, because they fall about the ascending node. In all the columns from N to S, the harvest moons gradually descend in the lunar orbit, and rise to less heights above the horizon. From S to N, they ascend in the like proportion, and rise to greater heights above the horizon. In both the columns under S, the harvest moons are in the lowest part of the moon's orbit, that is, farthest south of the ecliptic; and in the columns under N, the reverse. And in both these cases, their risings, though not at the same time, are nearly the same with regard to the difference of time, as if the moon's orbit were coincident with the ecliptic.

#### Years in which the harvest moons are least beneficial.

N	L							S
1807	1809	1809	1810	1811	1812	1813	1814	1815
1826	1827	1828	1829	1830	1831	1832	1833	1834
1844	1845	1846	1847	1848	1849	1850	1851	1852

#### Years in which they are most beneficial.

S	M							N
1816	1817	1818	1819	1820	1821	1822	1823	1824
1835	1836	1837	1838	1839	1840	1841	1842	1843
1853	1854	1855	1856	1857	1858	1859	1860	1861

We may observe farther, that in summer with us the full moons are low, and their stay is short above the horizon, when the nights are short and we have the least occasion for moon-light: in winter they go high, and stay long above the horizon, when the nights are long, and we want the greatest quantity of moon-light. Moreover as the sun is above the horizon of the north pole from the 20th of March till the 23d of September, it is plain that the moon, when full, being opposite to the sun, must be below the horizon during that half of the year. But when the sun is in the southern half of the ecliptic, he never rises to the north pole, during which half of the year, every full moon happens in some part of the northern half of the ecliptic, which never sets. Consequently, as the polar inhabitants never see the full moon in summer, they have her always in the winter, before, at, and after the full, shining for fourteen of our days and nights. And when the sun is at his greatest depression below the horizon, being then in Capricorn, the moon is at her first quarter in Aries, full in Cancer, and at her third quarter in Libra. And as the beginning of Aries is the rising point of the ecliptic, Cancer the highest, and Libra the setting point, the moon rises at her first quarter in Aries; is most elevated above the horizon, and full, in Cancer; and sets at the beginning of Libra in her third quarter, having continued visible for fourteen diurnal rotations of the earth. Thus the poles are supplied one half of the winter time with constant moon-light in the sun's absence; and only lose sight of the moon from her third to her first quarter, while she gives but very little light, and could be but of little, and sometimes of no service to them.

MOON, *Acceleration of the.* See ACCELERATION..

MOON-*Dial.* See DIAL.

MOON, *Horizontal.* See APPARENT MAGNITUDE.

MOON, *Prime of the.* See PRIME.

MOON-*Eyes, in the Manege.* A horse is said to have moon-eyes when the weakness of his eyes increases or decreases according to the course of the moon; so that in the wane of the moon his eyes are muddy and troubled, and at new moon they clear up; but still he is in danger of losing his eye-sight quite.

MOON-



**MOON-Fish**, in *Ichthyology*, a name given to the fish called by authors *orbis*.

**MOON-Seed**, in *Botany*. See **MENISPERMUM**.

**MOON-Trefoil**. See **MEDICAGO**.

**MOON-Wort**. See **OSMUNDA**.

**MOON**, *Mountains of the*, in *Geography*, mountains in the interior part of Africa, which extend from Negroland, through Abyssinia, to the Indian sea.

**MOONAGURRA**, a town of Hindoostan, in Golconda; 35 miles E.N.E. of Golconda.

**MOONYGURRY**, a town of Hindoostan, in the circar of Schaurunpour; 25 miles S.E. of Merat.

**MOOR**, **KAREL DE**, in *Biography*, a portrait painter of considerable and well-merited repute, who was born at Leyden in 1656. He was at first a disciple of Gerard Douw, afterwards of Francis Mieris, and then of Schalken. He practised in his native city with very great success, and some of the most illustrious princes of Europe were solicitous to employ his pencil. The grand duke of Tuscany requested his portrait by himself, for the Florentine gallery; and on the receipt of it, honoured him with a gold medal and chain.

He was employed also by the emperor of Germany to paint the portraits of prince Eugene and the duke of Marlborough on horseback; and his productions so gratified his royal patron, that he created De Moor a knight of the empire. He died in 1738, aged 82.

**MOOR**, *Mora*, a word sometimes used to express a heath, or barren tract of ground.

The word is sometimes also used for a *morass*, *moor*, or *fen*.

**Mora musca**, in *Ancient Writings*, particularly denotes a *mos*, or peat *mos*.

**MOOR-Berry**, in *Botany*. See **WHORTLE-Berry**.

**MOOR-Buzzard**, in *Ornithology*. See **BUZZARD** and **FALCO**.

**MOOR-Cock**, an English name for the red game, or our lagopus, more commonly called the *gor-cock*. It is a very delicate bird, larger than a partridge, and common on the hills in Derbyshire and Yorkshire. See **TETRAO Lagopus**.

**MOOR-Hen** is, according to some authors, the name of a genus of water-birds. See **GALLINULA**.

The common moor-hen, called *Gallinula chloropus* by authors, and by Linnaeus *Fulica chloropus*; is a very well known bird. This bird is common about our rivers, breeds twice or thrice in the summer, strikes with the bill like a hen, and in the spring has a shrill call; and is a very well-tasted bird. See **FULICA Chloropus**.

**MOOR Land**, in *Agriculture*. See **MOORY Land**.

**MOOR-Stone**, the name of a very remarkable stone found in Cornwall, and some other parts of England, and used in the coarser works of the present builders.

This is truly a white granite, and is a very valuable stone. It is very coarse and rude, but has beautiful congeries of variously constructed and differently figured particles, not diffused among, or running into, one another, but each pure and distinct, though firmly cohering with whatever it comes in contact with. Its colours are principally black and white; the white are of a soft, marbly texture, and opaque, formed into large congeries, and emulating a sort of tabulated structure; among these are many of a pure crystalline splendour and transparency; and in some are lodged in different directions many small flaky masses of pure talcs of several colours; some are wholly pellucid, others of an opaque white, others of the colour of brown crystal, and a vast number perfectly black. It is found in immense strata in some parts of Ireland, but is disregarded there.

It is found with us in Devonshire, Cornwall, and some

other counties; and brought thence in vast quantities to London. It never forms any whole strata there, but is found on the surface of the earth in immense and unmanageable masses; and to separate these into portable ones, they dig a hole with a wedge in some part of them, and surrounding it with a ridge of clay they fill it up with water; this by degrees soaks in, and finding its way into the imperceptible cracks, so far loosens the cohesions of the particles there, that the day after they drive a larger wedge into the hole, and the stone breaks into two or more pieces. It is used in London for the steps of public buildings; and on other occasions, where great strength and hardness are required.

The people of Cornwall, who have this stone in great plenty, use it in their tin-works, and particularly in their tin-kiln, on the good effect of which a great deal depends. This kiln is four-square, and at its top is placed a large block or moor-stone; the usual size of this block is six feet in length, and four in breadth. In the middle of this block there is made a hole of about six inches in diameter. This stone serves as a head to cover another like stone placed beneath it; but this under one is not so long as the upper by six inches. The reason of this is, that it must not reach the innermost or back part of the wall, which is the open place through which the flame ascends from another place below that, where a very strong fire of furze is constantly kept up; and there is another little hole also on the outside. The fore-part is like a common oven, and has such a sort of chimney.

The tin-ore is roasted in this kiln, to burn away the mundic, in this manner: the ore is brought in powder, and poured out in heaps on the surface of the top-stone; a man stands there, and thrusts it down through the hole in this stone into the kiln, that is, to the surface of the under-stone: a person who stands below spreads this as it falls with an iron rake, and gives notice to the person above when there is enough down, that is, when the surface of the lower stone is covered three or four inches thick. When this is done, the hole at the top is covered with green turfs, that the flame may reverberate the stronger; and the heat that the moor-stone acquires helps to roast the ore: while the flame that comes up from the ore is blue, there yet remains mundic among it; but when this is burnt off, the flame is yellow. Phil. Trans. N° 69.

The miners in some parts of Cornwall use the name moor-stone for a sort of coarse free-stone, which lies very often over the tin-ore: this is of a greyish colour, and is somewhat softer than that usually employed in building. See **GROWAN**.

**MOOR-Titling**, in *Ornithology*, a common English name for the *œnanthe*, more frequently called the *stone-chatter*. See **MOTACILLA Rubicola**.

**MOOR'S-Head**, in *Chemistry*, a copper cap made in form of a head, to be set over any vessel, or over a reverberating furnace.

**MOOR'S-Head** also denotes the head of a copper or glass still or alembic, which is luted on to the body or cucurbit, and hath a beak or pipe to let the spirit run down into the receiver.

**MOOR'S-Head**, in the *Manege*. See **MOOR'S-HEAD**.

**MOOR'S Island**, in *Geography*, one of the smaller Bahamas. N. lat. 26° 45'. W. long. 77° 40'.

**MOORBAD**, in *Geography*, a town of Hindoostan, in Baglana; 40 miles E. of Bassen.

**MOORDAMPOUR**, a town of Hindoostan, in the circar of Hindia; 9 miles S.W. of Hurdah.

**MOORE**, **JACOB**, in *Biography*, a native of Edinburgh, who painted landscape. He went to Rome about 1773, where



where he practised till he acquired considerable reputation. He was employed by the prince Borghese to conduct the alteration made in the gardens of his villa, near the Porta Pinciana, which he conducted with the taste of the modern English school of gardening, and was liberally remunerated by the prince. He died young, and left but few works behind, but for which he was more than duly extolled during his life. He was the pupil of Alex. Runceman.

MOORE, Sir JONAS, an eminent English mathematician in the 17th century, was born at Whitlee, in Lancashire, about the year 1620. He applied himself principally to the study of the mathematics, for which, from his childhood, he had discovered a strong partiality. This favourite pursuit he cultivated with great diligence and success, and acquired such a reputation, that during one of the expeditions of king Charles I. into the northern parts of England, he was introduced to his majesty as a person studious and learned in those sciences. Upon conversing with him, the king expressed much approbation of his acquirements, and gave him a promise of encouragement, which laid the foundation of his future fortune. He was afterwards appointed mathematical tutor to the king's second son James, to instruct him in arithmetic, geography, and the use of the globes. During Cromwell's government, he appears to have followed the profession of a public teacher of the mathematics; for he is styled in the title-pages of some of his publications, "professor of the mathematics." Mr. Granger says, in his "Biographical History of England," "that he was employed by the commissioners for draining and dividing the fens:" and in his survey, he observed that the sea made a curve line on the beach, from which he took the hint to keep it effectually out of Norfolk. This added much to his reputation; but no mention is made of the period of his life when he was thus occupied. After the restoration of king Charles II., he was noticed and employed by that prince, who bestowed on him the honour of knighthood, and at length promoted him to the important office of surveyor-general of the ordnance. He frequently availed himself of his interest at court for the advancement of learning, the encouragement of merit, and the establishment of institutions highly favourable and beneficial to the interests of the public, and of science in general. He patronized the famous Mr. Flamsteed, who had but a very scanty income at Cambridge, when he took him under his protection. In connection with Sir Christopher Wren, he urged the king to erect Flamsteed-house at Greenwich for a public observatory in 1675, recommending Mr. Flamsteed to be the king's astronomer, to make observations there; and being surveyor-general of the ordnance himself, was the reason why the salary of the astronomer-royal was made payable out of the office of ordnance. Being elected a governor of Christ's hospital, he was very instrumental in persuading the king to found a mathematical school there, with the allowance of a handsome salary for a master to instruct a number of boys in the sea-service. The school being established, there was still wanting a methodical work necessary for the instruction of the young people. This Sir Jonas Moore undertook, but death put an end to his labours before the work was completed. We are not informed of the year when that event took place, but it was probably in 1681, or rather before this, as the work referred to was published in that year by his sons-in-law, Mr. Hanway and Mr. Pottinger, who spared neither expence nor labour to have it finished in the best manner, and securing proper assistants for the purpose. Besides the "New System of Mathematics," in 2 vols. 4to., which was the title of his posthumous work, Sir Jonas published "Arithmetic, in two Books, viz. Vulgar Arith-

metic and Algebra;" "A Mathematical Compendium," which went through several editions; and he translated from the Italian "A general Treatise of Artillery," by Moretus.

MOORE, JOHN, an English prelate, educated at Clare-Hall, Cambridge, where he took his degree of D.D. in 1681. He was consecrated bishop of Norwich in 1691, and translated to Ely in 1707. He died in 1714. His sermons were published by his chaplain, Dr. Samuel Clarke, in one volume, 8vo.; and his library was purchased by king George II., who gave it to the university of Cambridge.

MOORE, PHILIP, a learned clergyman of the church of England, was born in 1706. In due time he was admitted into holy orders, and was appointed chaplain to the venerable Dr. Wilson, bishop of Sodor and Man, whose friend and companion he was for many years. At the funeral of that excellent prelate, he was appointed to preach the sermon, which has been published in Cruttwell's edition of the bishop's works. Mr. Moore was chaplain to Douglas, in the Isle of Man, and obtained the rectory of Kirkbride. He devoted much of his time to the instruction of young persons, and in revising the translation of the holy Scriptures into the Manks language. He engaged in this work at the recommendation of "The Society for promoting Christian Knowledge," at whose request he also translated into the same language the book of Common Prayer, bishop Wilson on the Sacrament, and other pious and practical pieces. He died in 1783, in the 78th year of his age. His remains were attended to the grave by a great number of the most respectable inhabitants, and by the whole body of the clergy of the island, all of whom, with the exception of four, had been educated by him.

MOORE, EDWARD, a poet and dramatic writer, was born in 1712 at Abingdon, where his father was settled as a dissenting minister. He was destined for business, and, at a proper age, was placed with a wholesale linen-draper in London; after leaving him, he went as a linen-factor to Ireland, where he remained some years. Upon his return he entered into partnership with an Irish gentleman, but they were not successful in their commercial speculations. He determined to quit trade, and devote himself to the profession of an author; and his first publication was "Fables for the Female Sex," which were printed in 1744. He was assisted in this work by Mr. Henry Brooke, author of *Gustavus Vasa*. It was very well received, and obtained for the author the patronage of Mr., afterwards lord, Lyttelton. In 1748 Moore appeared as the defender of his patron's political character, and his panegyrist, in a poem, entitled "The Trial of Selim the Persian for high Crimes and Misdemeanours," in which, under the mask of irony, he pays him many elegant compliments. In the same year he brought on the stage a comedy, entitled "The Foundling," which was not very successful, though aided by the acting of Garrick, and the other principal performers of the time. From Garrick he afterwards received substantial benefit: when, in 1754, he produced his comedy of "Gil Blas," it was, by the influence of the manager, forcibly carried through nine nights at Drury lane, notwithstanding a violent opposition. Garrick also exerted himself most vigorously in favour of his friend's tragedy of "The Gamester," brought on the stage in 1755. This is the principal dramatic performance by which Moore is known; it being now, at the distance of nearly 60 years, frequently reprinted. The story being taken from common life, is thereby rendered more impressive; and the horror inspired by the catastrophe, though painful to the feelings, is salutary in enforcing the moral



moral lesson intended by the writer. In 1758 he began a periodical paper, entitled "The World," by Adam Fitzadam, which is among the few works of the kind that have obtained success since those of Addison and Steele. For this he was chiefly indebted to the contributions of the wits of the age. The names of the earl of Chesterfield, Horace Walpole, Richard Owen Cambridge, Soame Jenyns, and others, are sufficient to attest the editor's respectable character and connections, and to ensure the high value of many of the papers. While engaged in this publication, he died of an inflammation of the lungs, in the month of February 1757, at the age of 45. "He had published," says his biographer, "in 1756, a collection of his works by subscription, in a 4to. volume, dedicated to the duke of Newcastle, and delicately complimenting his brother Mr. Pelham; but it was his fate to live on the verge of that indigence, which is generally the lot of those who trust to their pen alone for a subsistence. He was a man greatly beloved in society, for the simplicity of his manners, and the vivacity of his conversation. He left a widow and an only son, whose education and settling in the world were generously undertaken by lord Chesterfield. Mr. Moore, as a poet, is chiefly remembered by his "Fables," which are sprightly, ingenious, and instructive. His other verses are, for the most part, effusions of the light familiar kind, and songs; of which last, several were set to music, and became popular in their day.

MOORE, JOHN, archbishop of Canterbury, was son of a grazier at Gloucester, and educated at the grammar school of that city, after which he was entered at Pembroke college, Oxford. Being taken into the family of the duke of Marlborough, as tutor to one of his sons, he obtained, through that interest, a prebendal stall in the cathedral of Durham; in 1771, the deanery of Canterbury; and in 1776, the bishopric of Bangor; from whence, in 1783, he was raised to the archbishopric of Canterbury. He died in 1804.

MOORE, Dr. JOHN, a native of Scotland, born in 1730 at Stirling, the ancient residence of the Scottish kings, was the son of the Rev. Charles Moore, a clergyman of the established church, who was in high estimation among his people for the purity of his manners, and the amiableness of his disposition. He was one of the ministers of Stirling, and contrived, at that period, to live in a respectable manner on the usual stipend of 120*l. per annum*. On the death of his father, about the year 1735, John, then but five years old, removed with his mother to Glasgow, of which city she was a native, and where a small estate bequeathed to her by her father was situated. The lady, possessing great strength of mind, was enabled to superintend, with propriety and effect, the education of her son, and his three sisters. Being herself eminent for piety, she instilled the same principle into the minds of her offspring. After the necessary preparation in grammar learning, the subject of this article was matriculated at the university of Glasgow, and attended its various classes. As he was intended for the profession of medicine, he was placed under the care of Dr. Gordon, who did not disdain to unite the kindred arts of surgery and pharmacy. After he had obtained a sufficient knowledge of the practice of medicine, he went abroad to exercise the art in the army under the duke of Cumberland, in the Low Countries. On his return to England, he passed some time in London, attending the lectures of his countryman, Dr. Hunter, and obtaining every assistance in the way of his profession that the metropolis could afford. From London he went to Paris for farther improvement. Here he resided about two years, and acted as surgeon to the household of

the earl of Albemarle, the British ambassador. On his return, he again attended the lectures of Dr. Hunter, and went through a course under Dr. Smellie, then a very celebrated accoucheur. He now settled at Glasgow, first in connection with Dr. Gordon; and when this gentleman quitted the general practice, Mr. Moore chose for his associate Mr. Hamilton, professor of anatomy. In 1769 he was introduced to the family of the duke of Hamilton, by attending the young duke, James-George, then labouring under a consumptive complaint, of which he died in the fifteenth year of his age. In 1772 he obtained the diploma of doctor of physic from the university of Glasgow, and was soon after engaged by the duchess of Hamilton and Argyle to accompany her son on the continent. They spent five years together in this tour, and visited France, Italy, Switzerland, and Germany. This journey, added to his former residence in France and Flanders, gave him that intimate acquaintance with foreign manners, which he has so happily displayed in his several publications. On their return in 1778, Dr. Moore brought his family from Glasgow to London; and in the following year he published "A View of Society and Manners in France, Switzerland, and Germany," in two volumes, 8vo. This work was followed, in 1781, by another, intended as a continuation, entitled "A View of the Society and Manners of Italy." These works were extremely well received by the public, who seemed to consider them as among the most entertaining books of Travels that had appeared for many years, replete with amusing and characteristic sketches, and remarkably free from national prejudice or spleenetic censure. They went through several editions, and were quickly translated into various foreign languages. As if unwilling to suffer his medical character to sink into that of an author, he published, in 1786, a volume of "Medical Sketches," treating in a popular manner on several important topics relative to health and disease. This was well received; but the author was supposed to have given some offence to a few narrow minded men among his brethren, by the disclosure of certain arcana, which they, for the sake of interest, wish to conceal. It proved that he had studied his profession with diligence, accuracy, and success; but it probably had little effect in extending his medical practice. Dr. Moore, as a writer, next appeared in a new character, when in 1789 he published a novel, entitled "Zeluco; various Views of Human Nature." The tendency of this work, which abounds with many interesting events, is directed towards the education of youth; and it evinces very fully the fatal effects resulting from uncontrolled passion on the part of a darling son, and unconditional compliance on that of a fond mother. In Zeluco, Dr. Moore has displayed a knowledge of mankind, and a force of moral painting, which rendered that work much superior to the ordinary compositions of this class, and at once placed him high among the writers of fictitious narratives. The French revolution was the topic that next employed his pen. Dr. Moore, instead of surveying it at a distance, like the bulk of mankind, contemplated a very critical portion of it on the spot: he was not, indeed, present at the destruction of the Bastille, a structure dedicated for centuries to the crimes of a capricious and unbridled despotism; but he resided in France when the foreign armies, who assumed to give law to an independent state, were driven back by the enthusiasm of a whole people, who at that period seemed resolved to be free. In 1793 he published "A Journal during a Residence in France, from August to the middle of December 1792, &c." In this work, which consisted of two volumes, he followed his usual method of anecdote and description, intermixed with remarks;



and of the many writers on this interesting subject, he has been ranked among the most discerning and impartial. The same character will deservedly attach to his "View of the Causes and Progress of the French Revolution," which was published in 1795 in two volumes, 8vo. The doctor begins with the reign of Henry IV., and ends with the destruction of the royal family in 1793. Recurring to fiction, Dr. Moore published, in 1796, "Edward; various Views of Human Nature, taken from Life and Manners, chiefly in England." Edward is a foundling, like Tom Jones, originally brought up in a work-house; but his real name and family being discovered, he is finally united to Caroline. In 1800 he published his "Mordaunt," a novel, in three volumes, being "Sketches of Life, Characters, and Manners, in various Countries; including the Memoirs of a French Lady of Quality." He is supposed to have had his own son, general Moore, the subject of our next article, in view, when he comes to Mordaunt's arrival in Corsica, from Gibraltar, and is the eye-witness of and actor in the siege of Calvi; and he seizes this opportunity of describing the merits and talents of that son, who has done so much honour to his family and country. Dr. Moore spent the last years of his life in retirement at Richmond, where he died in 1803, regretted for his social and domestic virtues.

MOORE, *Lieutenant-General Sir JOHN*, son of the preceding, was born on the 13th day of November 1761, in the city of Glasgow. At the proper age he went to the grammar-school; but his father, on his going abroad with the late duke of Hamilton, took John, who was his eldest son, with him, being then only ten years of age. He remained abroad, sometimes with his father, and sometimes at different private schools at Geneva, and other places, during a great part of five years that Dr. Moore passed in France, Germany, and Italy. By this mode of education, he became early acquainted with the French, German, and Italian languages, and had the advantage of seeing these countries, being at the same time under the eye of his father.

Having, from his early youth, always shewn a decided inclination for the army, the duke of Hamilton obtained for him an ensigncy in the 51st regiment of foot, in the year 1776, then quartered at Minorca. He returned to Scotland in the same year, and from thence he went to join his regiment, and continued to serve with it till he obtained a lieutenancy in the 82d, commanded by that excellent officer, brigadier-general Francis Maclean, with which he went out to North America. The 82d was stationed, for the greater part of the remainder of the American war, in Nova Scotia; so that Mr. Moore had but little opportunity, while in the regiment, of seeing real service, except in the expedition to Penobscot, where, for the first time, he was in action, being then a captain-lieutenant. He commanded a piquet, stationed on the river to oppose the landing of the American force, was very sharply engaged, and nearly cut off with his party, before he regained the fort from which he had been sent, and which had been raised by general Maclean.

At the peace in 1783, captain Moore was reduced with his regiment. He was soon after brought into parliament, for the boroughs of Lanerk, &c., by the interest of the duke of Hamilton. In the year 1787, or 1788, he obtained the majority of the 4th battalion of the 60th regiment, then quartered at Chatham; and very soon after, major Moore negotiated an exchange into his old regiment, the 51st, then in Ireland. He now devoted himself to the study and practice of his profession, which was, through life, the object to which all his wishes pointed, and the road in which he determined to march in pursuit of fame and ho-

VOL. XXIV.

nourable distinction. It was on the occasion of the Spanish armament in 1790 that he succeeded, by purchase, to the lieutenant-colonelcy of the 51st; in which regiment he went to Gibraltar in the year 1791, or 1792. Lieutenant-colonel Moore continued with his regiment at Gibraltar, till after the affair of Toulon under lord Hood. About the time of the capture of general O'Hara, and the subsequent evacuation of Toulon, he was sent with his regiment, part of a reinforcement from Gibraltar, to join the army under lieutenant-general David Dundas, then with the fleet under lord Hood in Hieres bay. He was soon after sent with major Kochler, the deputy quarter-master-general, to Corsica, to gain information, to negotiate with Paoli, and to bring a military report of the practicability of an attack on Corsica. He was afterwards very actively employed under lieutenant-general Dundas, in the attack of the works at Martella bay, and commanded the troops which stormed the Convention fort. On this occasion, he entered the works at the head of the grenadiers of the royals. The French, who were old troops of the line, defended themselves with great spirit; and this was one of the very few instances where the opposing bayonets were fairly crossed. In the month of May 1794, general Charles Stuart, brother to the marquis of Bute, having succeeded to the command of the army in Corsica, appointed colonel Moore to command the reserve. The siege of Calvi followed very soon after, in which he acted a conspicuous part under the immediate command of the lieutenant-general, who was a man of extraordinary ability, and possessed of great military talents, as he evinced, by the masterly manner in which he conducted this siege, obliging the garrison, though more numerous than the besieging army, to surrender, without having made a single trench of approach, taking up his first position within 700 yards of the Mozzello fort, a regular casemated work. This fort, being silenced by the batteries thrown up against it, was stormed by colonel Moore at the head of the grenadiers of the reserve, on the twentieth day from the commencement of the siege. In the assault he received his first wound, after he had entered the work. The fall of this out-work decided the fate of Calvi, which surrendered soon after.

The military operations in Corfica made Moore's character known to general Stuart, and a friendship commenced, which continued during the general's life. The situation of adjutant-general to the army in Corfica becoming vacant at this time, he bestowed it on his friend Moore, and ever after, and on all occasions, shewed him every mark of confidence and esteem.

Colonel Moore left Corfica in October 1795, in consequence of a disagreement with the viceroy, who had occasioned the recal of general sir Charles Stuart, and that of the patriotic Paoli. The viceroy in the end disgusted the Corficans, and loft the island. Colonel Moore arrived in England in the latter end of November 1795, and was immediately appointed a brigadier-general in the West Indies, and attached to a brigade of foreign corps, which consisted of Choisseul's hussars, and two corps of emigrés. On the 25th of February 1796 he received an order to take charge of, and embark with general Perryn's brigade, going out with the expedition to the West Indies, under sir Ralph Abercrombie; that officer having unexpectedly failed in the Vengeance 74, and left his brigade behind. General Moore, having had no previous intimation that he was to embark, was not at all prepared to sail so soon as the next day. He was, however, determined to make no difficulties. He hurried from Southampton to Portsmouth, where the fleet was on the point of sailing; and as no transport had been or-

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dered to receive him, he had to solicit the agent of transports to find one; and having purchased bedding, and a few ready made shirts and stockings, sailed for the West Indies with the fleet at day-light on the 28th, with no other baggage than a small portmanteau, and what he could purchase the evening before he sailed at Portsmouth. Not one regiment of his own brigade was in the fleet, and he had the prospect, when he arrived in the West Indies, of finding himself without a command, as general Perryn would of course take the command of his own brigade.

On his arrival at Barbadoes, on the 13th of April 1796, he had an opportunity of waiting, for the first time, on the commander-in-chief, and stating to him his situation. This was the commencement of his acquaintance with sir Ralph, and that sagacious and attentive observer very soon distinguished him. It had been intended to send him to St. Domingo, but on his expressing an earnest desire to be employed in the expedition about to be undertaken by sir Ralph in person, his request was granted, and in the course of the operations against St. Lucie, which immediately followed, the commander-in-chief employed him in every arduous and difficult service which occurred. It was also during the operations against St. Lucie, that lieutenant-general sir John Hope, at that time a brigadier-general and adjutant-general to the army, and general Moore became known to each other. A friendship commenced, which gradually increased as they saw more of each other in the arduous and brilliant services on which they were employed in different parts of the world, under their illustrious commander-in-chief, and continued without interruption till the subject of this memoir finished his noble career, when it fell to the lot of the surviving friend to complete the last action of his life—to pay the final sad tribute to his fame; and record his merits in the manly and high-minded style of an accomplished soldier. General Moore certainly had opportunities, during the siege of Morne Fortunée at St. Lucie, which lasted from the 26th of April to the same day in May, of eminently distinguishing himself; he did not let these opportunities slip, and his conduct, as sir Ralph expressed in his public orders, was the admiration of the whole army. Sir Ralph, immediately on the capitulation, bestowed the command and government of the island on general Moore, paying him, at the same time, the highest compliments on his conduct: this public approbation, from so good a judge of military merit, was very honourable to, and highly valued by, the general; he, however, did all he could to induce sir Ralph to keep him with the army, and employ him in the reduction of the other islands, but without effect. Sir Ralph, in a manner, forced this important command upon him, at the same time giving him the most flattering reasons for wishing him to accept of it.

The admiral and general sailed from St. Lucie on the 3d of June, leaving brigadier-general Moore in a situation which required, from what remained to be done in such a climate, perhaps more military talent, and a greater degree of exertion and personal risk, than even there had been occasion for during the reduction of the island. The French commanding officer, and the principal post in the island, had surrendered, but numerous bands of armed negroes remained in the woods. The proprietors of the estates were afraid to remain on them, and were chiefly assembled in the towns. The Morne was quite open, and there was no accommodation for a garrison. The works and guns mounted were left as they were when it surrendered; all the stores of ammunition and provisions for this post were to be brought from a very considerable distance, the rainy season was just begun, and there was no hospital for the sick. The utmost activity and exertion were

requisite to arrange every thing, and put the island in a tenable state. He had at first between 4 and 500 men, mostly recruits, and they were falling sick very fast: in less than a month, of three regiments stationed in Morne Fortunée, only between 6 and 700 men could be furnished fit for duty. He found it necessary, in order to inspire confidence in the owners of estates, and reduce the blacks in the woods, to be continually on the alert; he traversed the island in every direction, visiting and establishing stations for the protection of the peaceable inhabitants, and preventing supplies being sent to the brigands from Guadaloupe. He exposed his person in this obscure but necessary warfare almost incessantly, being frequently engaged in the woods with the insurgents, whom at last he succeeded in completely reducing.

He had two narrow escapes from violent attacks of yellow fever; the last rendered it necessary that he should be relieved from the command of the island, and he returned to England in the month of July or August 1797.

In the month of November 1797, sir Ralph Abercrombie having been appointed commander of the forces in Ireland, desired that brigadier-general Moore might be put upon the staff in that country, which was done, and he accompanied sir Ralph to Dublin on the 2d day of December 1797.

During the time that sir Ralph commanded in Ireland, which was at a very critical period, immediately preceding the rebellion in 1798, Moore had an important command in the south of Ireland, which was very disaffected at the time, and was also the quarter where the enemy were expected to make a landing. His head-quarters were at Bandon, and the troops under his command amounted to 3000 men, amongst which were 12 companies of light infantry of the Irish militia remarkably fine men; his troops were considered as the advanced corps of the south. Almost immediately after sir Ralph gave up the command in Ireland, the rebellion broke out. The brigadier was very much employed during this unhappy warfare, first under major-general Johnstone, at New Ross, where the insurgents suffered much. He was immediately afterwards detached towards Wexford, at that time in the hands of the rebels. He had on this occasion only the 60th yagers, or sharp shooters, 900 light infantry, 50 of Hompesch's cavalry, and six pieces of artillery. He was directed to proceed to Fooke's mill, where he was to be joined by the queen's and 29th regiments from England, which had landed at Duncannon fort. With these he was to proceed to Taghmone. On the 20th of June, the day after his moving from New Ross, he waited at the place appointed for the two regiments to join till three in the afternoon, when, hearing nothing of them, he began to be apprehensive that as by the general plan it had been settled he should be at Taghmone that day, his not arriving might perhaps frustrate the plan of operation; he therefore determined to move on with the force he had, about 1000 men, great part of whom were Irish militia. He had not marched above a mile before a large body of rebels appeared on the road, marching to attack him. There was no want of courage or good will on the part of the Irish militia, but at that time they were very ill disciplined. The brigadier-general had examined the ground, as well as the short time would allow, in the morning, and thus was able to form his men to advantage on the right and left of the road, while the yagers were sent on to skirmish, and the guns advanced to a commanding position at the crossing of two roads. The rebels attacked with great spirit, but, after an obstinate contest, were driven from the field, and pursued with great loss. They amounted to about 6000 men, and were commanded by general Roche, a priest. After the action, the two regiments under lord Dalhousie arrived from Duncannon fort.



It was then too late to proceed to Taghmone, the brigadier therefore took post for the night on the ground where the action began. Next day, the 21st, he continued his march; on the road he was met by two men, one in red, with a white handkerchief in his hand; they proved to be from Wexford, one of them an officer of militia, who had been taken prisoner some time before, with proposals from the rebels to lay down their arms, on condition of their lives and properties being secured to them. As the brigadier had no authority to treat, he made no answer, but determined, instead of stopping at Taghmone, to proceed on to Wexford, and take a position to command the town, without entering it until general Lake and general Johnstone should arrive. On approaching the town, a great crowd of people were seen running out of it, and a house was observed on fire: this led general Moore to suspect that the rebels meant to burn the place and perhaps murder the prisoners in their possession. He therefore advanced rapidly, sent lord Dalhousie into the town with two hundred men to release the prisoners, and secure tranquillity; here they witnessed the most affecting scene that can be imagined, fathers and husbands meeting their wives and children whom they thought had been massacred. Many of the gentlemen, whose families were prisoners in the town, had attended him as guides. The rebels had piked and shot 40 of their prisoners the day before, on the bridge at Wexford, and that very evening it was intended to have murdered the rest, if the general had not hastened to save them. He thus had the good fortune, by his energy and decision, to perform one of the most pleasing services that could fall to the lot of an officer. Next morning general Johnstone, and afterwards general Lake, arrived with their different columns from Enniscorthy, where the day before they had jointly attacked, beat, and dispersed the rebels on Vinegar hill, with little loss on their side, but great slaughter on that of the rebels. Brigadier-general Moore continued to serve in Ireland under lord Cornwallis, until the latter end of June 1799, when he was ordered to return to England, to be employed on the expedition under sir Ralph Abercrombie. He had been employed under lord Cornwallis from the time of that nobleman's arrival in Ireland during the rebellion on all occasions of importance, and treated in the most confidential manner by him. While general Moore was in Ireland, he succeeded to the rank of major-general, and had a regiment given him. He left Ireland on the 22d of July 1799, and arrived in London on the 28th. Being appointed one of the major-generals to the army assembling under sir Ralph Abercrombie at the camp of Shirley, near Southampton, he joined the troops very soon after his arrival. The expedition failed from Ramsgate and the Downs on the 13th day of August. On the 27th the army landed to the southward of the Helder fort, in the face of the enemy, who were driven from the beach. It was intended that major-general Moore should storm the Helder with his brigade the same night: fortunately the garrison, amounting to 2000 men, evacuated it in the evening, and marched to join the rest of the enemy's troops, and he took quiet possession of it. The surrender of the Dutch fleet immediately followed the occupation of the Helder, which enabled admiral Mitchell to enter the Texel. Thus a very important piece of service was performed, though at first every thing had looked most unpromising, the enemy, perfectly apprized of the intended attack, and occupying a very strong post. Sir Ralph shewed, on this occasion, a great deal of enterprize, and success rewarded his spirit and decision.

On the morning of the 10th of September, sir Ralph's position was attacked before day-light by the combined

force of French and Dutch, amounting to about 13,000 men. They were repulsed with great loss. Major-general Moore's post was warmly attacked, and he received a musket ball on the finger of his right hand; his spy-glass, which was shattered in his hand, fortunately turned the ball, and prevented it going through his body. The same evening the duke of York arrived at the Helder, and in the course of the two following days the reinforcement of Russians and English disembarked, and made the united force amount to between 30 and 40,000 men. Major-general Moore's brigade continued in the division of the army commanded by sir Ralph Abercrombie. The general attack on the enemy's line, which took place on the 19th, entirely failed, owing to the misconduct of the Russians. Sir Ralph's division accomplished the service allotted to it with complete success and very little opposition; but the failure of the attack on the left occasioned the recal of sir Ralph, and the abandonment of all the advantages which he had obtained. On the 2d of October the enemy were again attacked. The fourth brigade under major-general Moore, with two troops of dragoons and two mounted fix-pounders, formed the advanced guard of sir Ralph's division. The first brigade of guards under major-general Doyle followed, then the sixth brigade under major-general Hutchinson. The reserve was commanded by colonel McDonald. The infantry moved in column along the beach, the artillery on the right, and the cavalry, about 1100, under lord Paget, on the right also. The advance of the column depended on the tide. At six in the morning it was low enough for them to advance, and they moved forward. Sir Ralph directed major-general Moore to form part of his brigade, so as to oppose the enemy stationed on the sand-hills. About this time, their light troops and hussars began to skirmish with the advanced guard. General Moore had scarcely formed two regiments, namely, the 25th and 79th, in pursuance of sir Ralph's orders, when they were attacked. These two regiments repulsed the enemy with great gallantry, charged them, and drove them for a considerable distance, though not without loss, general Moore himself being shot in the thigh, which, however, did not prevent him from doing his duty. These regiments were reinforced by the royals and 49th, and some time afterwards by the grenadier battalion of the guards. The enemy on the sand-hills continued to retreat as these regiments advanced, till they reached within a couple of miles of Egmont-on-Zee, where they were met by a strong reserve of the enemy, which advanced on them with great intrepidity. Major-general Moore's brigade in the course of five hours constant movement and action, forming the advance, and at the same time covering the flank on the sand-hills, were much dispersed and infinitely fatigued. He saw himself on the point of being surrounded, and seeing the impossibility of rallying the men under so hot a fire, great numbers continually falling in every direction, he had just determined to let them fall back to a certain distance to the rear, and then to endeavour to rally and bring them back. At this moment he received a musket-ball through his face that knocked him down. He was stunned, and could make no effort to rise. Two soldiers of the 92d lifted him up and supported him to the rear. When the 92d came up, those who were before retiring returned to the charge, attacked the enemy with spirit, and drove them off with slaughter, but not without great loss. Of major-general Moore's brigade alone, the killed and wounded amounted to 44 officers, and upwards of 600 non-commissioned officers and privates.

General Moore, being unfit for further exertion, was carried



ried to the rear, where his wounds were dressed. He was then placed on his horse, and, supported by his groom, he was conveyed back to his quarters, a distance of ten miles. After general Moore was carried off, the column advanced no farther; the rest of the day was passed in skirmishing. Towards dusk, the enemy, who had brought up some cannon on the beach, made a charge with their cavalry, and got possession of two guns, but were instantly charged, by lord Paget, with a few light dragoons and a good many officers who happened to be with him, repulsed, and the guns retaken.

The column under sir Ralph was too much jaded for further effort; he had exposed himself very much during the whole day, and two horses had been killed under him. General Moore had one horse shot under him in the interval between his wounds. It afterwards appeared, that the reserve, on joining general Coote's brigade, fell in with the enemy upon the sand-hills, close to the right of the Russians, and were engaged, in some degree, the whole day. Had they not inclined to the left from Camperduyn, but continued to move along on the flank of sir Ralph's column, they would have arrived fresh and in good order at the point of its destination by twelve or one o'clock; but, as it was, the column was so harassed, the regiments, one after another, being brought into action, Moore's brigade, in particular, being rendered quite useless, that they were forced to stop short, not having, at the close of the day, 2000 men who had not been in action, and those, from fatigue, unfit for any further exertion. The enemy were, however, forced to quit the field, and Bergen, Alkmaar, and Egmont-on-Zee, were entered by our troops the following day.

As soon as major-general Moore could be moved from his quarters, he was taken to the Helder, where he embarked on board the *Amethyst* frigate, and arrived at the Nore on the 24th; from thence he proceeded to London. Soon after his return to England from the Helder, a second battalion was added to the 52d regiment, and the command of it was bestowed by the king, in the most gracious manner, on major-general Moore. The major-general had by nature an excellent constitution, which he had strengthened by exercise, and never having addicted himself to intemperance, his wounds closed in the course of five or six weeks. He joined his brigade at Chelmsford on the 24th of December, 1799. In the early part of the year 1800, it had been intended to send a body of troops to the Mediterranean under sir Charles Stuart; he wrote to general Moore and proposed to him to serve under him, which was accepted with the greatest pleasure. It was at first intended that sir Charles should take out of England 15,000 men, but it was afterwards found that the regiments allotted for this service, and which had been part of the expedition to Holland, were insufficient, and only amounted to 10,000 effective. About the middle of March, the first division, amounting to 5000 men, embarked under major-general Pigot. At this time a change took place in the plan of the expedition; sir Charles had some disagreement with ministers, and resigned his situation. Sir Ralph Abercrombie was appointed to the command, and major-general Moore was named as one of his major-generals, with Hutchinson and Pigot, who failed about the end of April with the 5000 men. Sir Ralph was appointed commander-in-chief in Portugal and the Mediterranean; he embarked on board the *Sea-Horse* frigate on the 13th of May, and failed the same day, accompanied by Hutchinson and Moore. They arrived at Gibraltar the 6th day of June, failed again the 11th, and arrived at Minorca on the 22d of June. Sir

Ralph, on his arrival at Mahon, found letters from lord Keith informing him of the surrender of Genoa to the Austrian general Melas, who had left a garrison of between 2 and 3000 men in it, and had marched to oppose Bonaparte, who had crossed the Alps with 35,000 men, and was marching into Italy. Lord Keith communicated to sir Ralph the request of general Melas, that he would lose no time in going to Genoa. The troops were formed in two divisions, the first under major-general Hutchinson and brigadier-general Doyle, and the second under major-general Moore and brigadier-general Oakes. In the course of the 23d of June, the whole were embarked and sailed for Genoa. By hasting winds and calms they were kept back, and did not get within sight of Genoa until the 30th, when they met a sloop of war, which informed sir Ralph that the Austrians had evacuated Genoa, and that lord Keith, with the fleet, was in Leghorn road. On the arrival of sir Ralph with the troops off Leghorn on the 1st day of July, he learned the news of the battle of Marengo, with all its consequences. Sir Ralph had not above 5000 men with him, so that he had no reason to regret the delay, as with so small a force he could not have turned the course of events in favour of the Austrians. The troops returned to Minorca, part of them being sent under major-general Pigot to Malta, to assist the Maltese in the blockade of the French garrison there. It was not long after this that the troops which had been employed under brigadier-general Maitland in Quiberon bay arrived at Minorca, under lord Dalhousie, consisting of 3800 men. A fresh arrangement was made in the brigading of the army. It consisted of two divisions before, and now was formed into three brigades and a reserve; the latter was given to major-general Moore. The whole embarked at Mahon in the course of the 29th, 30th, and 31st of August, amounting to about 10,000 men, and arrived at Gibraltar on the 14th of September. On the 19th, the army under sir James Pulteney arrived from the attempt on Ferrol. The whole force, under sir Ralph, failed on the 20th from Gibraltar for Tetuan bay; it amounted, after the junction of sir James Pulteney's army, to 20,000 infantry fit for duty. They anchored in the evening in Tetuan bay, where they were employed watering until the 27th of September. The fleet was under the command of lord Keith, and the object of this expedition was an attempt upon Cadiz. The fleet was detained in the straits, and in Tetuan bay, until the 2d of October, by westerly winds, when the whole, consisting of about 150 sail, passed through the Gut, and anchored in sight of Cadiz on the 4th. It is not necessary to discuss the merits of this undertaking. The intention was to land to the northward of Rota, to march round and endeavour to destroy the arsenal at the Caraccas and the Spanish fleet. Major-general Moore was to land first with the brigade of guards and the reserve, in all about 5000 men. Sir Ralph wished to have a decided opinion from lord Keith whether or not he might depend upon a constant communication being kept up with the fleet during the operations on shore, and a security for the re-embarkation of the army when the service was over. It was the opinion of the sea-officers, that on the wind coming to the S.W. all communication must cease with the shore, and the fleet put to sea. Under such circumstances, it is surprising that even an attempt should have been made. On the morning of the 6th of October, the fleet being under way, the signal was made for the troops to prepare to land. The honourable captain Cochrane, of the *Ajax*, had the direction of the landing, and major-general Moore was on board with him: when the boats were assembled they were found not sufficient to contain



contain more than 3000 men, which was very short of the number Moore was ordered to make the landing with: it was at this time one o'clock, and before they could be landed, and the boats returned to the ship for more, it would be dark. The troops were therefore re-embarked, and preparations were ordered for making the attempt next day. That night it began to rain and blow from the S.W. right on shore, and the next morning the whole fleet, at the expense of some cables and anchors, got to sea. From that day until the 21st of October, this large fleet was beating about from Tetuan bay to Jeremie, according as the wind was; on the 22d the greatest part of them had got to Gibraltar, and it was intended to have gone to the Tagus to water the ships and refresh the troops. On the 24th, orders arrived from England for the armies to separate. Six battalions were ordered to serve under sir James Pulteney, and were to go to Lisbon, the rest of the army were to continue under sir Ralph Abercrombie, and to go to Egypt. Major-general Moore sailed with the first division, consisting of those ships that were most ready, on the 27th of October, and arrived at Minorca on the 5th of November. From thence they sailed to Malta, where the whole armament met, and were detained for some time by contrary winds. While preparations were making for the descent on the coast of Egypt, which was at this time intended to be near Damiëta, to take possession of that and from thence march directly upon Cairo, sir Ralph sent major-general Moore to visit the Turkish army near Jaffa, to communicate with the grand vizier, and to form an opinion of their force, and how far any effective co-operation could be expected from it. He landed at Jaffa on the 9th of January, from on board the *Camelion* sloop of war, and immediately proceeded to the vizier's camp. The first news he heard on his landing was the death of brigadier-general Kochler, the chief of the mission with the Turkish army, who was an able officer, full of zeal and intelligence, who had resided a long time with them, and was the only man that could have given him information, to be depended on, of the true state of their magazines and the organization of their armies. He found the vizier a weak-minded old man, without talent or military knowledge, who received him perfectly well: he remained five days in the camp, in the course of which he gained sufficient information of the state of the army and its resources, to satisfy himself that sir Ralph must trust entirely to the British fleet and army, as the vizier had not, at this time, the means of providing for his army during their crossing the desert. Their force, at this time, consisted of about 15,000 men, composed of an equal number of cavalry and infantry, and 50 pieces of field artillery. The plague was never out of their army, which, from all he could learn or observe, seemed to him little better than a wild ungovernable mob. They had lost in the last seven months 6000 persons by the plague, and the loss in the camp in one day was estimated at about 200 men. He left Jaffa on the 14th, and joined the army on the 20th. Sir Ralph was not at all disappointed with the report and opinion general Moore gave him; he had always been convinced that he had only the British force to depend upon, but it was necessary to ascertain the character and state of the Turkish army by the report of an officer selected for that purpose. Sir Ralph then determined to land in the bay of Aboukir, and march immediately upon Alexandria. At this time it was the opinion of the naval officers that the army, until they got possession of Alexandria, must depend upon the navy entirely for their supply of water, which was to be effected by boats following the line of the coast between Aboukir bay and Alexandria, for at this

time it was not known that the supplies could be forwarded by the lake Madie. Aboukir is 18 miles from Alexandria.

Every thing was ready for sailing from Marmorice on the 18th of February. During the time the expedition remained there it was very usefully employed for making this very formidable attempt on an enemy at that time supposed to amount only to about 14,000 French soldiers, besides the Greeks and natives, whom they had armed and disciplined. Whereas, it afterwards appeared, that there were not fewer than 32,000 French troops in Egypt. The army was exercised in practising landing, and every necessary arrangement made that the genius and experienced skill of sir Ralph could devise. Horses and mules for the artillery were procured, and about 400 cavalry were mounted. On the 22d of February the expedition, consisting of upwards of 15,000 soldiers, sailed in 180 vessels of all descriptions. On the 2d of March they anchored in the bay of Aboukir. The weather was so bad that no attempt could be made to land before the 7th, so that the enemy had plenty of time to make every preparation to oppose them. The chief engineer, major M'Kerras, and major Fletcher, had been sent from Marmorice some time before to reconnoitre the coast: they had gone too near in an open boat, were attacked by an armed germ from Aboukir, major M'Kerras was killed, and the boat, with major Fletcher, was taken. This was a serious loss, particularly at that time. Major-general Moore was sent, accompanied by colonel Liutendahl, two days before the landing was made, to reconnoitre the place which was pitched upon for the purpose. From a bomb vessel which lay about a mile and a half from the beach, they made their observations. On the right was a high sand hill, on the left the lake Madie: the space between, about a mile in length, was the place for the landing. The ground to the left was woody and uneven, and favourable for covering and concealing an enemy close to the shore. They shewed no force, except their patrols and piquets extended along the line. The ground to the right of the sand hill was searched and commanded by the guns of the fort of Aboukir. No works could be seen, but as the fleet had appeared off Alexandria on the 1st of March, and had anchored in the bay on the 2d, it was reasonable to suppose that every preparation was made to oppose the landing. Major-general Moore, on reconnoitring the beach, was convinced that the high sand-hill must either be the right or the centre of the enemy's position, he believed it to be their right, and determined to carry it with the right of the reserve, as it commanded the beach on each side of it. On the 7th, the wind having abated, and the surf on the beach considerably gone down, the reserve, the guards, and two regiments of major-general Coote's brigade, received orders in the evening to get into the boats at two o'clock the next morning. They formed the first debarkation. The rest of the troops were moved in the evening from the large ships without, to those drawing less water and lying farther in shore, for the purpose of supporting the first disembarkation more expeditiously.

Captain Cochrane, of the *Ajax*, had the direction of the landing. Two vessels were anchored in the evening near the shore, one to mark the right of the landing, and the other the intermediate point on the same line for the centre, and the boats, as they received the troops, were to rendezvous along-side these two vessels, where captain Cochrane, and the captains of the navy under his command, were to arrange them according to their respective divisions, and to the different brigades and regiments, as they were intended to form in order of battle. Soon after day-light in the morning of the 8th, the boats were at the rendezvous. The reserve which



which formed the right was directed to the centre of the high sand-hill, the rest of the boats dressed by them. Major-general Moore, and the honourable colonel Edward Paget, were in the boat with captain Cochrane. At eight o'clock in the morning the signal was made to advance. The French had been looking at them for two hours. They were drawn up to oppose them. They fired on the boats from 15 pieces of cannon, as soon as they were within reach, first with round shot, then with grape, and the infantry began as soon as they came within musket shot. The boats continued to row on steadily, the sailors and soldiers cheering as they approached the beach. Many were killed and wounded, and some of the boats were sunk. The fire from the enemy of grape and musquetry was very severe. As soon as the boats touched the ground, the officers and men sprung out on the beach and loaded. Major-general Moore, at the head of the grenadiers and light infantry of the 40th, with the 23d and 28th regiments in line, ascended the sand-hill. They did not fire a shot until they gained the summit, when they charged the enemy, drove them, and took four pieces of cannon, with part of their horses. The French retreated to the border of a plain, where general Moore halted, as upon the left a heavy fire of musquetry was kept up. Brigadier-general Oakes, with the left of the reserve, consisting of the 42d Highlanders, the 58th regiment, and the Corsican rangers, landed to the left of the sand-hill, and were attacked by both infantry and cavalry, which they repulsed and followed into the plain, taking three pieces of artillery. The guards and part of general Coote's brigade landed to the left of the reserve, they were vigorously opposed, but repulsed the enemy, and followed them into the plain. The want of cavalry and artillery (for it was some time before the guns that were landed could be dragged through the sand) saved the enemy from being destroyed. This was one of the most splendid instances of British intrepidity that perhaps ever happened. The enemy had eight days to assemble and prepare, and the ground was extremely favourable to them. The loss of the enemy was considerable, that of the British amounted to 600 killed and wounded, of which the reserve lost 400. In the course of the afternoon the rest of the army landed, and the whole moved forward a couple of miles, where they took post for the night.

On the morning of the 9th, major-general Moore and lieutenant-colonel Anstruther, the quarter-master-general, went forward with the 92d Highlanders, the Corsican rangers, and some cavalry, to look for a new position. The country was unequal, sandy, and thickly interspersed with palm and date trees. He posted the 92d at a place about two miles in front, where there was a small redoubt, and where the space became more narrow than any where else, by the sea and lake Madie running up on each side. He then went forward with the cavalry, until they were met by a strong patrol of the enemy, on which they retired. On reporting to sir Ralph, he directed major-general Moore to take post with the reserve on the ground where he had placed the 92d: by noon he had taken possession of the post with the reserve, and placed his out-posts. On the 10th there was some skirmishing with the out-posts of the reserve and the enemy's cavalry. The main body of the army was detained in their post-position, till, by the exertions of the navy, the stores and provisions were landed and forwarded to them. On the 11th, sir Ralph went to the reserve, the brigade of guards moved forward, and took post half way between them and the rest of the army. The lake Madie was ordered to be examined, with a view to the practicability of conveying the army stores by it, which it was afterwards found could be done. On the 12th, the army moved

forward in two columns, each composed of a wing. The reserve, in two columns, formed the advanced guard to each column. The enemy's cavalry retired skirmishing as the army advanced. The army halted at a tower that they found evacuated, from the top of which a body of infantry was seen advancing. The line was instantly formed, and the army advanced with the utmost regularity and steadiness. The enemy, on seeing this movement, first halted, and afterwards retired to some heights which terminated a plain, where the British army took post for the night, and lay on their arms. Major-general Moore had the direction of the advanced posts; and the 90th and 92d regiments, though not belonging to the reserve, were placed under his orders for the night.

The out-posts of the enemy and the advanced guard of the British were so near each other, that it was impossible that either army could move without bringing on a general action. At six o'clock in the morning of the 13th the army moved forward in two columns from the left, each composed of a line. The reserve, in one column from the left, marched on the right of the other two, to cover the flank. Sir Ralph's intention was to attack the enemy's right, and, if possible, to turn it. The 90th and 92d regiments formed the advanced guards to the two columns of the army, and, having got too far a-head of the columns, were attacked by the main body of the enemy, and suffered severely before the columns could come to their support. These two regiments, however, maintained their ground, and defeated a body of cavalry that attempted to charge them. The action now became general along the line; the French, being forced back, retreated, covered by a numerous artillery, halting and firing wherever the ground favoured them. The British army advanced rapidly without artillery, as their guns, being dragged through sand by the seamen, could not keep up with the infantry. The reserve remained in column on the right flank covering the two lines, and though mowed down by the enemy's cannon in front, and exposed to musketry from hussars and light infantry on their flank, continued to move forward with such steadiness and regularity, that at any time during the action and pursuit, they could have been wheeled to a flank without an interval. The two lines advanced with equal order until they reached a rising ground, where there were the ruins of an ancient building of considerable extent; from this height they saw the enemy retreating in confusion through a plain, under cover of the fortified heights in front of Alexandria. Sir Ralph followed them into the middle of the plain, where a consultation was held, and it was then intended that general Hutchinson, with part of the second line, which had been least engaged, should attack the enemy's right, while major-general Moore, with the reserve supported by the guards, attacked their left near the sea.

General Hutchinson had a considerable circuit to make to get to the ground where he was to make his attack, and the attack of the reserve was to be regulated by his. When he got to his ground, the position of the French was found to be so strongly defended by a numerous artillery, and covered besides by the guns on the fortified heights near Alexandria, that the attempt was given up, and as the army were in their present position exposed to the enemy's cannon without being able to retaliate, a position on the height in the rear was marked out, to which the army fell back as the evening advanced. This severe action cost the British army 1300 men killed and wounded. The enemy had between 6 and 7000 men in the field, their artillery was exceedingly well served, and being abundantly supplied with artillery horses, and having besides so great a superiority of cavalry, that the few belonging to the British could not act, they were



were enabled to make good their retreat under a tremendous cannonade, galloping off with their guns, as the British closed, to wherever the ground favoured them, and then renewing their fire. The French loss could not have been equal to that of the British, from the circumstances above stated.

The position of the British was not a bad one, with the right to the sea, and the left to the lake of Madie and the canal of Alexandria. A redoubt was thrown upon the right in front of the reserve, and two upon the canal on the left, which was the weak side, having an extensive plain in front and rear of it. Heavy cannon were landed and placed in these field-works, which made the position of the army tolerably secure. Water was found by digging wells, so that the harassing operation of supplying the army with that necessary article was not required: their chief want, at this time, was that of fuel. The situation of the British army at this period was certainly a very critical one. The French army which had fought them on the 13th was a small portion of the troops they had then in Egypt. They were posted opposite to them on very strong ground, from whence they could not be driven without heavy cannon; after which, the siege of Alexandria was to be undertaken by an army very inferior in numbers. It was quite evident that when government ordered sir Ralph on this expedition, they were ignorant of the force that the French had in Egypt, and had suffered themselves to be deceived by erroneous information, and misled by the intercepted letters. Sir Ralph was well aware of the arduous task he had to perform, and of the improbability of final success; he was, however, determined that no efforts should be wanting on his part to fulfil the service he was sent on, and, at all events, to support the honour and reputation of the British army. He knew that at this time Menou was collecting a force at Demeuhur: the army that had as yet opposed him was commanded by general Friou. It was sir Ralph's intention, as soon as the heavy cannon and intrenching tools were got up, to attack the enemy on both their flanks; if he failed, he would retire to their present position, until another was prepared in the rear to favour their retreat, and the re-embarkation of the army. The camp of the British was about four or five miles from Alexandria. In front of the reserve, which formed the right of the army, was a very extensive ancient ruin, which the French called Cæsar's camp: it was twenty or thirty yards retired from the right flank of the redoubt, and commanded the space between the redoubt and the sea. In the redoubt and the ruin, major-general Moore had posted the 28th and 58th regiments, and had made his arrangements with brigadier-general Oakes, in case of attack, to support this post, which was the place for the reserve to fight: indeed, from the nature of the ground, if the enemy carried it, it would have been impossible for the British army to remain in this position. He was the major-general of the day on the 20th. After visiting the piquets, he remained with the left piquet of the reserve until four in the morning of the 21st. The enemy had been perfectly quiet during the night. Nothing had been observed from them but some rockets, which they were accustomed occasionally to throw. Thinking every thing quiet, he had left orders with the field officers to retire to their posts at daylight, and was riding towards the left to give similar orders. Just as he reached the left piquet of the guards, who were to the left of the reserve, he heard a fire of musketry on the left, but every thing continuing quiet on the right, from the style of the firing, and from other observations he had made the evening before, he suspected it was a false alarm; he was, however, riding along towards the left, when a firing

commenced from the piquets of the reserve; he instantly turned, saying to his aide-camp, "this is the real attack, let us gallop to the redoubt." He met the piquets falling back, and by the time he reached the redoubt, in which colonel Paget with the 20th were posted, he found it warmly attacked. The day was not yet broken, and the smoke made it darker. The general orders were for the troops to stand to their arms an hour before day-light, and fortunately they had fallen in before the attack began. The honourable colonel Paget with the 28th manned the redoubt, and he had two companies in reserve, which he formed on the left of it, as the redoubt was open in the rear: the 58th regiment lined the old ruin, and, when the attack commenced, brigadier-general Oakes brought down the left wing of the 42d Highlanders to the left, according to the previous arrangements. Major-general Moore had sent captain Anderson, his aide-camp, for the right wing of the 42d, and with orders for the 23d, and four flank companies of the 40th, to support the ruins. He was speaking to colonel Paget on the platform of the redoubt, when his horse was shot in the face, and colonel Paget received a wound in the neck, which knocked him down. The darkness prevented the motion of the enemy from being seen, but their drums were beating the charge, and their voices were heard encouraging one another to advance.

About this time, some person said to major-general Moore that the French had turned the left of the reserve. He at first thought they had mistaken the 42d for the enemy, as he saw them forming on the left where he had ordered them; but colonel Paget, who had recovered from the stun of the blow he had received, and had been placed on his horse, rode up to him and said, "I assure you the French have turned us, and are moving towards the ruin." He looked, and saw a column of French completely in the rear. At this instant, the right wing of the 42d came up, he ran to them, ordered them to face to the right-about, and, pointing to the French column, ordered them to charge the enemy, whom, he cried out, were completely in their power. He charged them with the 42d, using the bayonet, drove them into the ruin, where they were received by the 58th, and not a man of that column escaped being killed or taken prisoners. The instant this was done, he led them back to the flank of the redoubt, and on the way met another column of the French, that had also penetrated. He attacked them with the 42d and part of the 28th, and drove them back. In this charge he was shot through the leg. The 42d and 28th, pursuing the enemy too far, got into disorder, and were charged suddenly by the cavalry. Major Honyman, seeing that general Moore had difficulty in walking from his wound, lent him his horse. The French cavalry had got completely among the 42d and 28th; but these gallant regiments, though in disorder, rallied, and brought down so many men and horses with their fire, that the cavalry were driven off. The great object of the French was to carry the redoubt, and turn the right of the army: accordingly their great effort was against the reserve. They made another desperate attack with a line of infantry in front and on both flanks of the redoubt. The 58th regiment in the ruins allowed them to approach within sixty yards, and then gave them their fire so effectually as to knock down great numbers, the rest went off. Upon the left of the redoubt the 42d and 28th repulsed what was in front, but, while following, were again charged, and penetrated by a large body of cavalry, who passed quite through and into the rear of the redoubt. Sir Ralph was surrounded, and must have been taken or killed, but a soldier of the 42d shot the hussar who was attacking him. Major-general  
Moore



Moore had to clap spurs to his horse to get clear, and galloped to the ruins, to bring up some of the troops from thence, which he knew were formed, and in good order. The 28th regiment, who were lining the parapet of the redoubt, seeing the cavalry enter the rear of the redoubt, faced about, without quitting their ground, and killed all the dragoons who had entered it. The 42d, though broken, and penetrated by the cavalry, were individually fighting, intermixed with them: major-general Moore ordered the four flank companies of the 40th from the ruins to fire high, and pour in a couple of volleys, though at the risk of hurting the 42d, and part of the 28th.

In an instant the field was covered with men, and horses galloping without their riders. This body of cavalry was destroyed. Every attack the French made was repulsed with great slaughter. In the early part of the action, and in the dark, some confusion was unavoidable, but wherever the French appeared, the British went boldly up to them, even the cavalry breaking in had not in the least dismayed them. As the day broke, the foreign brigade under brigadier-general, afterwards sir John Stuart, who fought the battle of Maida, came to the second line to the support of the reserve, flared in the action, and behaved with great spirit. Day-light enabled major-general Moore to get the reserve into order, but there was a great want of ammunition. The guns could not be fired for a very considerable time, otherwise the French must have suffered much more severely, while retreating from their different unsuccessful attacks, than they did. The enemy's artillery continued to gall the British severely with shot and shells, after the infantry and cavalry had been repulsed. The British could not return a shot. Had the French attacked again, the British had nothing but their bayonets, which they unquestionably would have used, as never was an army more determined to do their duty. But the enemy had suffered so severely, that the men could not be got to make another attempt. They continued in front at a distant musket shot, until the ammunition for the English guns was brought up to enable them to fire, when they very soon retreated. While the attacks were made on the British right, a column attacked the guards on the left of the reserve, but were repulsed with loss. The French general, Menou, had concentrated the greatest part of the force in Egypt for this attack: the prisoners stated his force in the field at about 13,000 men, of whom between three and four thousand were killed or wounded. The British army lost about 1300 men, of which upwards of 500 belonged to the reserve. This battle commenced at half past four in the morning, and terminated about nine. The French made three different attacks, with superior numbers, the advantage of cavalry, and a numerous and well served artillery. The British infantry here gave a decided proof of their superior firmness and hardihood. Sir Ralph, who always exposed his person very much, in this last battle carried the practice perhaps farther than he had ever done before. Major-general Moore met him early in the action, close in the rear of the 42d, without any of the officers of his family; and afterwards, when the French cavalry charged the second time and penetrated the 42d, major-general Moore saw him again and waved to him to retire, but he was instantly surrounded by the hussars; he received a cut from a sabre on the breast, which penetrated his clothes and just grazed the flesh. He received a shot in the thigh, but remained in the field until the battle was over, when he was conveyed on board the *Foudroyant*. Major-general Moore, at the close of the action, had the horse killed under him that major Honeyman had lent him. When the battle was over, the wound in his leg became so stiff and

painful, that as soon as he could get a horse, he gave the command of the reserve to colonel Spencer, and retired with brigadier-general Oakes, who commanded the reserve under him, and who was wounded in the leg also, to their tents in the rear. Brigadier-general Oakes was wounded nearly at the same time, and in the same part of the leg that major-general Moore was, but they both continued to head the reserve until the battle was over. When the surgeon had dressed their wounds, finding that they must be some time incapable of action, they returned to the *Diadem* troop ship. Captain Anderson, one of Moore's aide-camps, and who had served with him ever since he was a general officer as brigade-major, or aide-camp, was surrounded and in the hands of the hussars at the time that they charged the 42d, and was shot through the shoulder and fell: when he recovered his senses, he found himself lying among dead hussars and their horses.

Sir Ralph Abercrombie died of his wound on board the *Foudroyant* on the 28th day of March, deeply lamented by the army, and by none more than by major-general Moore, who had served so much with him, had been so distinguished by him, and who, being honoured with his complete confidence, knew how to estimate his upright and honourable character. He was a man of excellent judgment and great sagacity, which, aided by long military experience, and the greatest zeal in his profession, made him an excellent officer. He possessed great firmness and decision, the enterprising spirit of youth and bravery to excess. The great disadvantage he laboured under was being extremely short-sighted, which made him stand in need of good executive general officers under him. On his death the command devolved on major-general Hutchinson.

The French, after their defeat on the 21st of March, strengthened and contracted their line of defence in front of Alexandria, and after leaving a sufficient force for the defence of the place, detached the greater part of their force to Rhamanie, which was the key of their communication with Cairo. Major-general Hutchinson at first detached colonel Spencer to Rosetta, with about 1200 British and a body of between 4 and 5000 Turks, which had arrived about the time of sir Ralph's death.

The town was evacuated by the enemy on his approach. It is unnecessary here to detail the operations in Egypt that followed the battle of the 21st, as major-general Moore was confined on board the *Diadem* with his wound until the 10th of May, when he was removed to Rosetta for the benefit of a change of air. He suffered very severely; the ball had passed between the two bones of his leg; he endured a long confinement and much torment, from inflammation and surgical operations. When at length he could move on crutches, and was removed to Rosetta, where he got a house on the banks of the Nile, agreeably situated, he began to recover rapidly. On the 26th of June the wound, though not yet closed, being in a healing state, he could no longer resist the desire he had to rejoin the army under lord (then major-general) Hutchinson; he embarked in a gorm on the Nile, and arrived within a few miles of the camp before Cairo on the 28th: on the 29th he joined the army and took the command of the reserve. The treaty for the surrender of Cairo, and evacuation of Egypt by the garrison, was just brought to a conclusion. The Turkish army under the grand vizier was encamped on the east side of the Nile; they were in considerable force, and had a short time before defeated a body of 4000 French who had marched against them from Cairo. The British, the Turks under the captain pasha, and the Mameluks, were encamped on the west side of the Nile; the communication with the vizier's army was kept up by a



bridge of boats; on the 10th of July the French evacuated Cairo. General Hutchinson and general Craddock, being both indisposed, the former ordered major-general Moore to take the direction of the march of the army to the place of embarkation. Every previous arrangement being made with the French general, the march commenced on the 15th of July, at day light, in the following order. The Turks, the baggage of the British, the first line, the cavalry, the rear guard, the French army, and the Mameluks. In this manner they proceeded to the place of embarkation at Rosetta, encamping every night: the ground for the French army, being given to them every evening by the British quarter-master-general, was about two miles from the British, who encamped with their front to the French, and who, agreeably to the capitulation, preserved their arms, and a certain quantity of ammunition.

This extraordinary march lasted till the 31st of July, the greatest order being preserved in both armies. No communication between them was suffered but by special leave. The moment they came to their ground, every evening the piquets were posted. The French army that surrendered at Cairo did not consist of less than 10,000 fighting men, of which about 800 were cavalry, and they had 50 pieces of cannon well horsed and equipped. About 2000 of the French army were on board the galleys that attended the army down the Nile. Major-general Moore continued to serve in the army of Egypt until after the surrender of Alexandria, when he returned to England, the peace having been very soon concluded after that event. He received the honour of knighthood, and the order of the Bath, almost immediately after his return to Egypt.

During the short peace he was constantly on the home staff, and on the breaking out of the war in 1803, he was stationed in command at Sandgate, on the coast of Kent, which, during the alarm of an invasion from Boulogne, was an important post. His brigade consisted of the two battalions of his own regiment, the 52d, the 43d, the 95th rifle regiment, the 4th or king's own, and the 78th Highlanders. The 52d and 43d had begun to be formed on a plan of his own as light corps, which was the beginning of the light division, that has been found so useful on the peninsula of Spain; and their great superiority having now been established by real service in the field, many other regiments have since been formed upon the same system. General Moore's object was to combine the knowledge and practice of the duties of light troops, with the general system for the movements of the army, and to form these regiments so as to be ready to act either as light troops, or in the usual mode, according to circumstances.

In the month of June 1806, lieutenant-general sir John Moore was sent to Sicily to serve under general Fox, as second in command. He continued in that situation till the month of July 1807, when general Fox, whose health was unequal to active operations, returned to England, and sir John Moore was appointed commander-in-chief in the Mediterranean. He continued in Sicily till the latter end of September 1807, when he received orders to embark with part of the army and proceed to Gibraltar, leaving the command in Sicily to general Sherbrook. He embarked on the 24th of October on board the *Cliffone* frigate. The general officers he was directed to take with him were named, and also the regiments, in all upwards of 7000 men.

It was now intended that he should afford assistance to Portugal, at the time of the first invasion of that kingdom by Junot. Instead, however, of accepting the proffered aid, the prince regent of Portugal adopted, as he imagined,

the only measure by which he could preserve his own honour and safety, and afford a chance to such of his subjects, as preferred liberty and tranquillity in the Brazils to the tyranny of the French, of accompanying him in his emigration. His fleet, which had long been in a state of preparation, failed, under the protection of the English, to the Portuguese settlements in South America, the king embarking on board the ship commanded by captain Graham Moore, brother to sir John, on whom the command of the expedition devolved.

Sir John returned, according to the instructions previously given him, to England, without landing in Portugal, and he was in the spring of 1808 dispatched to Sweden with 10,000 men, to assist against a combined attack from Russia, France, and Denmark. On the 17th of May this army reached Gottenburgh; and it was soon intimated, that the troops must not land. The soldiers and horses, consequently, remained tossing on board the crowded transports for several weeks. Sir John Moore prudently suppressed the feelings excited by so inhospitable a reception, and so opposite to what he had been led to anticipate. He repaired, however, to Stockholm to communicate his orders, and to concert measures for the security of Sweden. He there found that the king of Sweden was bent on conquest, though he had not an army adequate even to defend his own country. He proposed, that the British should remain in their ships, till some Swedish regiments could be collected, and that the combined forces should land and conquer Zealand. Sir John was too experienced an officer not to foresee the absolute impracticability of the project. He represented, in the most respectful manner possible, that the difficulties were such, as not to be surmounted by the bravest troops. It was next proposed, that the British alone should land in Russian Finland, storm a fortress, and take a position there. This notion was considered by the British general as more preposterous than the former, and he endeavoured to prove that 10,000 British were insufficient to encounter the principal force of the Russian empire, which would quickly be brought against them. The objections which he was obliged to make to these and to other schemes equally absurd, drew upon him the resentment of his Swedish majesty, who arrested him in his capital. He, however, with considerable address, withdrew from the thralldom of Sweden without committing his government. On his return, he was honoured with the approbation of the ministers and his sovereign, and there seems no doubt, that with a general possessed of less good sense and political firmness, the army would have been exposed to inevitable destruction. After having acted in the Mediterranean and also in Sweden as commander-in-chief, sir John Moore was superseded by sir Harry Burrard, and was called upon to serve in Portugal, as third in command. Upon such treatment many an officer would instantly have resigned, but sir John Moore was superior to modern military etiquette: he loved his country, and was ready to serve it in any situation singled out for him by his sovereign. He sailed with his commanding officer in the fleet to Portugal on the 31st of July. They did not arrive at Lisbon with their army till after the battle of Vimiera, and the subsequent armistice. Little of importance occurred for some weeks; but on the resignation of sir Harry Burrard, sir John Moore was, on the 6th of October, appointed to the chief command of an army to be employed in Spain. It had been the design of government, since the month of August, to send an army to the north of Spain; the project was now to be put into execution, and Galicia, or the borders of Leon were fixed upon by the war minister



as the place for assembling the troops. Sir John was ordered to send the cavalry by land, but it was left to his own discretion to transport the infantry and artillery either by sea or land. He was also assured, that 15,000 men were ordered to Corunna, and he was directed to give such orders to Sir David Baird, their commander, as would most readily effect a junction of the whole force. Sir David had arrived at the place of his destination on the 13th of October, and was astonished, disappointed, and mortified to find, that the junta of Galicia refused him permission to land his troops, and when this *favour* was granted him, his reception was so extremely cold, that he was disposed to doubt whether the Spanish government really wished for the co-operation of Great Britain. A similar impression was made on the mind of Sir John Moore when he arrived at Salamanca on the 13th of November. Indeed it was not for the first time that he now learnt that little reliance could be placed on the Spaniards. The government of the country had recommended Burgos as the point of union for the British troops, and Madrid and Valladolid were the places appointed for the magazines. The commander-in-chief had been led to expect, through Lord Bentinck, that 60 or 70,000 men would be assembled under Blake and Romana, in Asturias and Galicia. He had not got far into the country before all his hopes were completely disappointed. Setaro, who had agreed to supply the divisions of the army with rations on the march to Portugal, failed in his contract, and but for the constant and unremitting exertions of the generals themselves, they could not have proceeded for want of subsistence. A thousand inconveniences resulted also through the great want of money, the inhabitants of Spain and Portugal being unused to paper currency. With respect to the central junta, of whose exertions we, in England, heard so much, it was soon evident to Sir John Moore, that "self-interest, mutual jealousy, and discord distracted their councils. There was no predominant leader to give uniformity to their acts, no animating passions to elevate their minds. By cold languor, and foggy dulness, they chilled and damped the spirits of the nation." From Corunna Sir David Baird wrote, "They (the government of Spain) promise every thing but give nothing." It was at this period that Sir John Moore began to anticipate the result which followed: he foresaw that the enthusiasm of his army, and of the people of England, could not avail in the great cause in which he had embarked; and in a letter addressed to Lord William Bentinck, on the day of his arrival at Salamanca, he mentions with indignation the deception which had been practised in England with regard to the flourishing situation of affairs in Spain, by the agents of his own government, and urged upon his lordship and Mr. Frere the necessity of unfolding to their principals the real truth; and he adds, "the English army, I hope, will do all which can be expected from their numbers; but the safety of Spain depends upon the union of its inhabitants; their enthusiasm in their cause, and their firm and devoted determination to die, rather than submit to the French: nothing short of this will enable them to resist the formidable attack about to be made upon them. If they will adhere, our aid can be of the greatest use to them; but, if not, we shall soon be out-numbered, were our force quadrupled. I am, therefore, much more anxious to see exertion and energy in the government, and enthusiasm in their armies, than to have my force augmented. The moment is a critical one; my own situation is particularly so—I have never seen it otherwise, but I have pushed into Spain at all hazards—this was the order of my government, and it was the will of the people of England."

Two nights after writing this letter, Sir John was awakened from his sleep by an express to inform him that the French army had advanced, and taken possession of the city of Valladolid, which is but twenty leagues from Salamanca. We have before observed that Sir John was positively informed that his entry into Spain would be covered by 60 or 70,000 men; and that Burgos was the city intended for the point of union for the different divisions of the British army. But already not only Burgos, but Valladolid, was in possession of the enemy; and he found himself with an advanced corps in an open town, at three marches distance only from the French army, *without even a Spanish picket to cover his front!* He had at this time only three brigades of infantry, without a gun in Salamanca. The remainder, it is true, were moving up in succession, but the whole could not arrive in less than ten days.

At this critical time the Spanish main armies, instead of being united either among themselves, or with the British, were divided from each other almost by the whole breadth of the peninsula. The fatal consequences of this want of union were but too soon made apparent; Blake was defeated, and a report reached Sir David Baird that the French were advancing upon his division in two different directions, so as to threaten to surround him. He, consequently, prepared to retreat upon Corunna; but Sir John Moore, having ascertained that the report was unfounded, ordered Sir David to advance, in order, if possible, to form a junction with him.

It was at this moment that Mr. Frere, the British ambassador at Madrid, first commenced his official communications with Sir John Moore. Either from an excess of zeal and hope which clouded the knowledge which he possessed of Spanish affairs, or from a total ignorance of them, unbecoming and disgraceful in a diplomatic character, situated as he was, where he had access to the best sources of information; he represented the defeat of the armies of Blake and of Estramadura, and the consequent success of the French, as of trivial moment, and strongly pressed the British to press forward to the capital. Sir John Moore, however, fortunately had more accurate and earlier means of learning the operations of the Spanish and French armies. On the 28th of November he received information that Castanos was completely defeated, and now there was no army remaining, against which the whole French force might be directed, except the British; and it was in vain to expect that they, even if they had been united, could have resisted or checked the enemy. Sir John Moore, therefore, determined to fall back on Portugal, to hasten the junction of General Hope, who had gone towards Madrid, and he ordered Sir David Baird to regain Corunna as expeditiously as possible. This determination to retreat created dissatisfaction among the army, who could not be judges of the necessity of the movement. Mr. Frere also wrote expressly against it, mentioning the French force as "about *eleven* thousand only;" though if he were at all qualified for the duties of the high office to which he had been appointed, he might have known that Bonaparte was rapidly advancing with nearly *eighty* thousand men. Is it a sufficient excuse for Mr. Frere, that he was deceived by the traitor Morla; ought he to have trusted to the information of a single man, when he had the means of getting at real facts from unquestionable sources of authority? The fate of Spain and of the whole British army depended upon the knowledge of the truth; and had the requisitions and advice of Mr. Frere, who, perhaps, followed the counsels of Morla, been literally obeyed, not a man of the British army could have escaped.

When Sir John Moore had determined upon a retreat, he assembled



fumbled the general officers, and shewed them the grounds of his resolution: he told them he had not assembled them, in order that they might be induced to commit themselves by giving any opinion upon the subject; he took the whole responsibility upon himself: all that he required of them was, that they would immediately prepare for carrying it into effect. The idea of retreating was still very generally disapproved, and murmurs against it from officers of rank were heard in every quarter. "Even the staff officers of sir John Moore's family lamented it, and, for the first time, doubted the wisdom of his decision." He, however, had the satisfaction of learning, very soon after, that general Hope completely agreed with him.

Had sir John Moore followed the dictates of his own judgment, and acted on what he knew was the real state of Spanish affairs, and the strength, position, and probable movements of the French armies, he would have carried his determinations of retreat into immediate and complete execution. But unfortunately for his country, before he could carry his plans into effect, he received letters from Mr. Frere, dated the 30th of November, strongly pressing him to advance to Madrid, and giving a most flattering picture of the enthusiastic and determined spirit of the people, and of the ample resources of the country. This communication was soon followed by a messenger sent expressly by the prince Castelfranca and Morla, the governors of Madrid, with a paper signed by them, in the name of the supreme junta, and dated on the second of December. This paper was an exaggerated flattering representation of the real and resources of the Spaniards, and the statements contained in it were farther recommended to sir John Moore's attention by another letter from Mr. Frere, dated even the third of December, from Talavera, in which he presses the general, in the strongest terms, to advance to the capital, although that capital had, unknown to him, been abandoned to the enemy on the preceding day without striking a single blow. In an evil moment, the British general, not suspecting the traitorous intentions of Morla, suffered his own judgment to give way to the representations of the traitors in Madrid, and Mr. Frere. He suspended his retreat, and even ordered sir David Baird to advance; for it could never enter into the conception of sir John Moore, that the two chiefs of the junta had conspired to betray the capital of their own country, and to entice the army of their ally into the power of the enemy. Nor could he suspect, when a confidential agent of Mr. Frere was representing Madrid as in little danger, that, in fact, it had already submitted at the very sight of the French army; that the Spanish chiefs were crouching at the feet of Bonaparte; and that the people at large were overwhelmed with terror and despair. Nor was it imaginable, to an ingenuous mind, like that which sir John Moore possessed, that the British minister should be so grossly deceived, as to send, for his instruction, intelligence the reverse of the truth, and to require of him, in so positive a manner, to succour a city which had actually surrendered. Yet this Mr. Frere, on the day after the surrender of Madrid, urges on the general "the propriety, not to say the necessity, of supporting the determination of Spanish people (in defending Madrid) by all the means which have been entrusted to you for that purpose. I have no hesitation in taking upon myself any degree of responsibility that may attach itself to this advice."

As, however, sir John Moore had now completely effected his junction with general Hope, and had removed every obstacle to his junction with sir David Baird, whenever it might be deemed expedient, he determined to persist in his

resolution of advancing, though that resolution had been formed, under the idea that Madrid not only held out, but was capable of opposing the French for a considerable length of time, if not with ultimate and complete success. Sir John was anxious to meet the wishes of his troops, by leading them against the enemy; he determined, therefore, to attack Soult, who was posted at Saldanha, by which he thought he should draw off the French armies to the north of Spain, and thus afford an opportunity for the Spanish armies to rally and re-unite. Soult was probably posted in that spot, with so small a body of men, for the purpose of enticing the British army farther into Spain, or at least of occupying their attention; while Bonaparte, in person, with his whole disposable force, endeavoured to place himself between the British army and the sea. At length the two armies met; and the superiority of the British cavalry was eminently displayed in a most brilliant and successful skirmish. About 600 of the imperial guards of Bonaparte were beaten, and driven off the field by half the number of British, leaving 55 killed and wounded, and 70 prisoners, among whom was general Le Febvre, the commander of the imperial guard. Notwithstanding this and other advantages gained over the enemy, a retreat was become indispensably necessary, and the only difficulty was to determine the route that ought to be pursued. The French that were now dispatched after sir John Moore, upon the lowest calculation, amounted to 70,000 men, while the troops under the British commander were not more than 27,000. Sir John Moore was anxious to have defended the passes of Galicia, but this he was often prevented from doing, owing to the immense superiority of the enemy, want of provisions, and the danger of having his positions turned. So rapid was the march of the main body of the French army under Bonaparte, and so closely did they pursue sir John Moore, that the advanced guard of the enemy entered Fordefillas on the same day that the British began to retreat from Sahagun, so that the distance between them was scarcely 30 miles.

Sir John Moore, in his retreat, instead of being benefited or aided by the Spanish troops under Romana, was greatly impeded by them. He had given strict directions to that commander to leave the route to Astorga open for the English; yet when he arrived at that town, he found it completely occupied by Romana's troops, and it was not without the utmost difficulty, and the exertion of much skill and activity, that sir John Moore was able to draw off his army from it before the arrival of the French. The situation of the British at this time was most dreadful. In the midst of winter, in a dreary and desolate country; the soldiers, chilled and drenched by deluges of rain, wearied by long and rapid marches, in bad roads, were almost entirely destitute of fuel, either to dress their food or dry their clothes, and when they did halt, found it extremely difficult, frequently impossible, to procure shelter. Their provisions were scanty, and procured with great labour, and in an irregular manner; the waggons, in which were their magazines, baggage, and stores, were often deserted in the night-time by the Spanish drivers, terrified at the approach of the French: the bullocks and mules by which they were drawn could not be made to move, except by their native drivers; it was, therefore, frequently necessary to destroy the provisions and stores, in order that they might not fall into the hands of the enemy. In one instance there were even two carts with dollars to the amount of 25,000*l.*, which, for want of proper cattle to draw them, fell behind, and after every effort to save the money, so necessary at that



moment, the casks were obliged to be rolled down a precipice, and the advanced guard of the French passed the place in a few minutes afterwards.

In the midst of this distress the Spanish peasantry offered no assistance, and shewed no sympathy; they did nothing to harass or retard the pursuing army; they even fled at the approach of the English, their allies, carrying with them every thing that could alleviate their distress, or contribute to their comfort or preservation. The whole behaviour of these people, for want of being organized by their officers, during the retreat of sir John Moore's army, was calculated to excite the strongest disgust in the minds of the British, against the service in which they had engaged, who saw themselves exposed to a superior force, and suffering under the most cruel privations for the sake of people who would neither stir in their own behalf, nor assist those who were encountering every evil on their account.

The difficulties and anxieties of the British commander were increased by the relaxation which took place in the discipline of the army. The disappointment which they had experienced in not having an opportunity of measuring their strength with the enemy, the privations and distresses under which they suffered, in a retreat which they regarded, from their ignorance of the numbers of the French, as an unnecessary and disgraceful flight; and above all, the indifference to their sufferings which the Spaniards uniformly manifested, contributed to weaken their habits of order and discipline. As, however, it was of the utmost importance to restore them to an army who might every moment be compelled to resist the attack of a far superior force, sir John Moore was compelled to issue such orders as might unequivocally point out his knowledge of the extent to which the want of discipline had proceeded, the persons to whom he principally attributed it, and his positive and unalterable determination to punish it in the most severe and exemplary manner. At Lugo, on the sixth of January, in his general orders, the commander-in-chief says, "the advanced guard of the French is already close to us, and it is presumed that the main body is not far distant; an action may, therefore, be hourly expected. If the generals and commanding officers of regiments wish to give the army a fair chance of success, they will exert themselves to restore order and discipline in the regiments, brigades, and divisions which they command.

"The commander of the forces is tired of giving orders, which are never attended to; he, therefore, appeals to the honour and feelings of the army he commands; and if those are not sufficient to induce them to do their duty, he must despair of succeeding by any other means. He was forced to order one soldier to be shot at Villafranca, and he will order all others to be executed who are guilty of similar enormities; but he considers there would be no occasion to proceed to such extremities, if the officers did their duty; as it is chiefly from their negligence, and from the want of proper regulations in the regiments, that crimes and irregularities are committed, in quarters, and upon march."

The remarks in this order are extremely severe, but they were necessary, and the circumstances of the case would not admit of palliation. In the retreat, hundreds of soldiers were left behind in a state of intoxication, which nothing but complete insubordination could have admitted. On the first of January, the general found the little town of Bembibre filled with stragglers of the preceding divisions. And when he marched with the reserve and cavalry to Villafranca on the second, he left a detachment of cavalry to cover the town, while parties were sent to warn the stragglers, amounting to nearly a thousand men, of their danger, and to drive them, if

possible, out of the houses. Some few were prevailed upon to move on, but neither threats nor the approach of the enemy could induce the greater number to quit the houses. At length the rear guard was compelled to march and leave these senseless people to their fate. The road was filled with Spanish and British stragglers, armed and unarmed, mules, carts, women and children, all mingled in strange confusion. As the French dragoons galloped through this long line of stragglers, they slashed them with their swords mercilessly to the right and left: and these men were often so insensible from liquor, as neither to make resistance nor get out of the way.

At Lugo sir John Moore was anxious to engage the enemy; and he was satisfied that the general orders, already cited, had produced such an effect in his army, as to give an earnest of victory. A slight skirmish ensued, in which the British rushed forward with charged bayonets, and drove the enemy's column down the hill with considerable slaughter. After this, marshal Soult, having experienced the talents of the general, and the intrepidity of the troops he had to encounter, did not venture to renew the attack; from this, it was concluded, that his intention was to harass the British as much as possible during their march, and to defer his attack till the embarkation. This was on the seventh of January, and on or before that day the Spanish central junta had pledged themselves, and so also had Mr. Frere, that 44,000 Spanish soldiers should be united to his army, whereas not a single Spanish soldier was to be seen. The British army had been followed and assailed by all the disposable French army, and was totally abandoned by the Spaniards, who neither united with them, according to their stipulation, nor had a single Spanish corps advanced to attack, or even to threaten the French posts, now weakened by the absence of their army. Thus was sir John Moore again deceived by a mission from the Spanish government, and the British minister, and the devoted troops had nothing on which they could depend but their arms.

The general, thus situated, judging it neither safe to act offensively, nor to delay his retreat any longer, quitted his ground in the night, leaving fires burning to deceive the enemy. The French did not discover their retreat till long after day-light, so that the British army got the start of them considerably. On the eleventh of January, the whole of the British reached Corunna, the port where they hoped to embark, not, however, without the probability of a battle. In this they had to encounter many adverse circumstances; they were exhausted and almost worn out by a rapid march of 250 miles of a dreadful country, in the most inclement season of the year, deprived of every accommodation, and often destitute of food and shelter. They had been obliged to sacrifice most of their baggage, and some of their artillery; the greater number of their horses had been put to death, to prevent them from falling into the hands of the enemy. Notwithstanding these and other difficulties; notwithstanding they were disappointed in not finding the transports at Corunna, the British army rejoiced that before they quitted the shores of Spain, they should have an opportunity to front their enemies. At the sight of them their wearied and exhausted limbs were braced with new vigour, and the native valour of British soldiers supplied the place of refreshment and rest.

The enemy gave no particular indications of attack till about noon of the 16th of January: at this time sir John Moore was giving directions for the embarkation; but the moment intelligence was brought that the enemy's line were getting under arms, he struck spurs to his horse,



and flew to the field. The advanced piquets were already beginning to fire at the enemy's light troops, who were pouring rapidly down the hill on the right wing of the British. Early in the action, sir David Baird, leading on his division, had his arm shattered with a grape-shot, and was forced to leave the field. At this instant, the French artillery plunged from the heights, and the two hostile lines of infantry mutually advanced beneath a shower of balls. They were still separated from each other by stone-walls and hedges. A sudden and very able movement of the British gave the utmost satisfaction to sir John Moore, who had been watching the manœuvre, and he cried out, "That is exactly what I wished to be done." He then rode up to the 50th regiment, commanded by majors Napier and Charles Banks Stanhope, who had got over an inclosure in their front, and were charging most valiantly. The general, delighted with the gallantry of the two majors, who had been recommended by himself to the military rank they held, exclaimed, "Well done the 50th! Well done my majors!" The plaudits of their general and beloved friend excited them to new efforts, and they drove the enemy out of the village of Elvina with great slaughter. In the conflict, major Napier, advancing too far, was severely wounded and taken prisoner, and major Stanhope received a ball through his heart, which instantly put an end to a most valuable life. So instantaneous must have been the death of major Stanhope, that a sense of pain had not torn from his countenance the smile which the bravery of his soldiers and the applause of his commander had excited.

Sir John Moore proceeded to the 42d, and addressed them in these words, "Highlanders, remember Egypt." They rushed on, driving the French before them. He sent captain Hardinge to order up a battalion of guards to the left flank of the Highlanders, upon which the officer commanding the light company, conceiving that, as their ammunition was nearly expended, they were to be relieved by the guards, began to fall back; but sir John, discovering the mistake, said, "My brave 42d, join your comrades, ammunition is coming, and you have your bayonets." They instantly obeyed, and moved forward. While the general was speaking, a cannon ball struck him to the ground. He raised himself, and sat up with an unaltered countenance, looking most intently at the Highlanders, who were warmly engaged; captain Hardinge assured him the 42d were advancing, upon which his countenance immediately brightened. The general was carried from the field, and on the way he ordered captain Hardinge to report his wound to general Hope, who assumed the command. Many of the soldiers knew that their two generals were carried off the field, yet they continued the fight till they had achieved a decisive and brilliant victory, over a very superior force.

The fall of general Moore is thus described by captain Hardinge:—"I had been ordered by the commander-in-chief to desire a battalion of the guards to advance; which battalion was at one time intended to have dislodged a corps of the enemy from a large house and garden on the opposite side of the valley; and I was pointing out to the general the situation of the battalion, and our horses were touching, at the moment that a cannon-shot from the enemy's battery carried away his left shoulder, and part of the collar-bone, leaving the arm hanging by the flesh.

"The violence of the stroke threw him off his horse on his back. Not a muscle of his face altered, nor did a sigh betray the least sensation of pain.

"I dismounted, and, taking his hand, he pressed mine forcibly, casting his eyes very anxiously towards the 42d regiment, which was hotly engaged; and his countenance

expressed satisfaction when I informed him that the regiment was advancing. Afflicted by a soldier of the 42d, he was removed a few yards behind the shelter of a wall.

"Colonel Graham Balgowan and captain Woodford about this time came up, and, perceiving the state of sir John's wound, instantly rode off for a surgeon.

"The blood flowed fast, but the attempt to stop it with my fist was useless, from the size of the wound.

"Sir John assented to being removed in a blanket to the rear. In raising him for that purpose, his sword, hanging on the wounded side, touched his arm, and became entangled between his legs. I perceived the inconvenience, and was in the act of unbuckling it from his waist, when he said in his usual tone and manner, and in a very distinct voice, It is as well as it is; I had rather it should go out of the field with me."

The account of this disaster was brought to sir David Baird while the surgeons were dressing his shattered arm. He ordered them instantly to desist, and run to attend on sir John Moore. When they arrived, he said to them, "you can be of no service to me, go to the soldiers, to whom you may be useful."

As the soldiers were carrying him slowly along in a blanket, he made them turn him round frequently to view the field of battle, and to listen to the firing, and was pleased when the sound grew fainter. On his arrival at his lodgings he was in much pain, and could speak but little, but at intervals he said to colonel Anderson, who for one-and-twenty years had been his friend and companion in arms—"Anderson, you know that I always wished to die in this way." He frequently asked "are the French beaten?" and at length, when he was told they were defeated in every point, he said, "It is a great satisfaction for me to know we have beaten the French."—"I hope the people of England will be satisfied, I hope my country will do me justice." Having mentioned the name of his venerable mother, and the names of some other friends for whose welfare he seemed anxious to offer his last prayers, the power of utterance was lost, and he died in a few minutes without a struggle.

Thus fell, at the age of forty-seven, at the conclusion of a critical victory, which preserved the remainder of his army from destruction, lieutenant-general sir John Moore, a name that must be long dear to his country, which was well disposed to do justice to his memory, and gratefully to acknowledge, in every possible way, the important services which he had achieved for it.

We have devoted a longer space than usual to commemorate the actions of this hero; but in so doing, we have had an opportunity of putting on record, in a work that is likely to be durable, the brilliant exploits not only of the subject of this article, but of the British military, whose valour and intrepidity were never more distinguished than in those actions in which sir John Moore took a distinguished part, and in which, as we have seen, he received no fewer than six wounds; one in the head; from a shell, in Corsica; three in Holland, before he could be prevailed on to leave the field; a musket-shot in Egypt, which, however, did not interrupt his exertions till the battle was won; and a cannon-ball in Spain, which bereaved his country for ever of his services.

Sir John Moore spent his life in the army, and his popularity among the officers and soldiers was never exceeded, which was owing to his modest and unassuming manners; to firmness, tempered with kindness, towards those under his command, and to a conduct to all scrupulously just. He was indefatigable in the duties of his profession: when engaged in actual warfare, he always rose between three and four in the morning, lighted his fire and candle by a lamp,

which



which was placed in his room, and employed himself in writing till eight o'clock, when the officers of his family were assembled for breakfast. After breakfast he received the general officers, and all persons with whom he had business; and the necessary orders were issued. He always rode before dinner, either to view the troops, or reconnoitre the country.

On the 25th of January, the earl of Liverpool, in moving the thanks of the house to the officers who had gained the battle of Corunna, referred to the loss which the nation had sustained in the death of sir John Moore, "whose whole life," he said, "had been devoted to the service of his country; for there was scarcely any action of importance, during the two last wars, in which he had not participated." In the same evening lord Castlereagh expressed his sorrow "at the loss of one of the ablest of our generals, possessing, in an eminent degree, every valuable quality that can dignify the man, and enhance the superiority of the soldier; giving, in the evidence of his past life, the best assurance of what might have been expected in future, had he lived, from his zeal, intrepidity, and talents." He concluded by moving, "That an address be presented to his majesty, requesting that a monument be erected in the cathedral of St. Paul's, to the memory of the late lieutenant-general sir John Moore, knight of the Bath, who, after an honourable and meritorious life, fell by a cannon-ball, in the action near Corunna, on the 16th of January 1809, after having, by his judicious dispositions, skill, and gallantry, repulsed an enemy of superior force, and secured to the troops under his command a safe and unmolested embarkation."

To all which we may subjoin the following very handsome tribute of respect paid to his memory, by his royal highness, the commander-in-chief, in the general orders, issued from the Horse-Guards, February 1, 1809.

"The benefits derived to an army, from the example of a distinguished commander, do not terminate at his death: his virtues live in the recollection of his associates, and his fame remains the strongest incentive to great and glorious actions.

"In this view, the commander-in-chief, amidst the deep and universal regret, which the death of lieutenant-general sir John Moore has occasioned, recalls to the troops the military career of that illustrious officer for their instruction and imitation.

"Sir John Moore, from his youth, embraced the profession with the feelings and sentiments of a soldier: he felt, that a perfect knowledge, and an exact performance of the humble, but important duties of a subaltern officer, are the best foundations for subsequent military fame; and his ardent mind, while it looked forward to those brilliant achievements for which it was formed, applied itself, with energy and exemplary assiduity, to the duties of that station.

"In the school of regimental duty, he obtained that correct knowledge of his profession, so essential to the proper direction of the gallant spirit of the soldier; and he was enabled to establish a characteristic order, and regularity of conduct, because the troops found in their leader a striking example of the discipline, which he enforced on others.

"Having risen to command, he signalized his name in the West Indies, in Holland, and in Egypt. The unremitting attention with which he devoted himself to the duties of every branch of his profession, obtained for him the confidence of sir Ralph Abercrombie; and he became the companion in arms of that illustrious officer, who fell at the head of his victorious troops, in an action which maintained our national superiority over the arms of France.

"Thus sir John Moore, at an early period, obtained,

with general approbation, that conspicuous station, in which he gloriously terminated his useful and honourable life.

"In a military character, obtained amidst the dangers of climate, the privations incident to service, and the sufferings of repeated wounds, it is difficult to select any one point as a preferable subject for praise; it exhibits, however, one feature so particularly characteristic of the man, and so important to the best interest of the service, that the commander-in-chief is pleased to mark it with his peculiar approbation.

"The life of sir John Moore was spent among the troops.

"During the season of repose, his time was devoted to the care and instruction of the officer and soldier; in war, he courted service in every quarter of the globe. Regardless of personal considerations, he esteemed that to which his country called him, the post of honour; and by his undaunted spirit, and unconquerable perseverance, he pointed the way to victory.

"His country, the object of his latest solicitude, will rear a monument to his lamented memory; and the commander-in-chief feels he is paying the best tribute to his fame, by thus holding him forth as an example to the army."

Among the works referred to for the facts of which this article is composed, we may mention the volumes of the New Annual Register; An Historical Sketch of the last Years of the Reign of the late King of Sweden; and above all, to Mr. James Moore's valuable and very interesting Narrative of the Campaign of the British Army in Spain, &c.

MOORE, in *Geography*, a county of North Carolina, in Fayette district; containing 4767 inhabitants, including 600 slaves. Its chief town is Alfordston.

MOORE Bay, a small bay of the Atlantic ocean, on the western coast of the county of Clare, Ireland. It merely serves for small craft, and is frequented by fishermen; but indifferent as it is, it is the only break in the rocks to which the name can be applied, from the mouth of the Shannon to Dunmore, a coast peculiarly dangerous to navigators. (See MALBAY.) N. lat. 52° 38'. W. long. 9° 35'. Cruttwell. M'Kenzie. Beaufort.

MOORE Town, a town of Jamaica; 22 miles E.N.E. of Kingston.

MOOREAH, a town of Hindoostan, in Rohilkund; 20 miles N.E. of Bereilly.

MOOREFIELD, or MOORISTOWN, a post-town of New Jersey; 13 miles E. of Philadelphia.

MOOREN, a town of Bengal; 9 miles S. of Doesa.

MOORFIELDS, a post-town of America, and capital of the county of Hardy, in Virginia, situated on the east side of the south branch of Patowmac river; containing a court-house, gaol, and between 60 and 70 houses; 25 miles from Romney.

MOORGONG, a town of Hindoostan, in Berar; 13 miles N.W. of Chanda.

MOORGULL, a town of Hindoostan, in the circar of Cicacole; 21 miles W.N.W. of Cossimcotta.

MOORHU, a town of Bengal; 30 miles E. of Doesa.

MOORJA, a town of Africa, in Bambarra; 130 miles E. of Sego.

MOORING, at *Sea*, is the act of confining and securing a ship in a particular station, by chains or cables, which are either fastened to the adjacent shore, or to anchors in the bottom.

A ship, when launched from the stocks, is furnished with



one stream-anchor, and another which is termed a launching-anchor, somewhat heavier than the stream-anchor, hanging by stoppers to the cat-heads; by one or both of which she is first brought up, and afterwards warped to her "head and stern moorings," which are as follow. Across the bottom of the harbour or river, two chains, parallel to each other, if the bed of the river will admit of it, are extended at the distance of 200 feet from each other, by means of anchors, having only one fluke, which is sunk, and secured in the ground by piles, on the opposite sides, near low-water mark. To the rings of the anchors these chains are attached by a peculiar sort of link, called a "shackle." Each of these chains has, at about one-third of its length, a large iron ring, to which is fastened a chain, called an "up-and-down span;" which, lying on the ground, connects the parallel chains, and serves to keep them steadily in their places. At about 30 or 40 feet distance from each other, along each chain, chain-pendants, from five to nine in number, are fastened, having, at the end which connects with the ground work, a shackle; and at the other end, a link called a "Jew's-harp," through which the bridle or hawser of a ship, when moored, is passed. The centre chain-pendent is fixed to the ring of the chain; and the number of the chains must depend upon the number of tiers required, each tier occupying two chains, because the ships are moored head and stern. But every tier does not always occupy two whole chains; because, unless a passage between the tiers is requisite, the chain to which the head chain-pendent of one tier is affixed, has likewise fastened to it the stern chain-pendent of the next tiers. These moorings are used in rivers or harbours of small extent, to which they are adapted; but in other places, not frequented by many ships, or of considerable extent, there is another sort in use, called "swinging moorings." These differ from the former only in this; the ground work being the same. To the ring of the chain is fixed one chain-pendent, the end of which is passed through a large buoy; and to that is connected a swivel-ring by a shackle, and thus kept constantly from sinking into the grounds. This is used for mooring one or two ships to. Near each end of the chain is fixed one chain-pendent, or more, supported likewise by a buoy, used only for the purpose of warping ships from the middle to any intended place.

To the "head and stern moorings," ships are thus fastened: clench the end of a bridle to the Jew's-harp of the chain-pendent, and pass it into the hawse-hole; then heave it up, and bit it, like the after-bridles, into the gun-room port, or in upon the quarters, and take a round turn round the beam of the after-hatch, and cross it with a throat and round seizing; or, if more convenient, round the jeer-bits. To moor to "swinging moorings," pass out the ends of the bridle, one on each side, through the hawse-hole next the stern; then pass them through the swivel-ring of the chain-pendent; then return them into the ship through the after hawse-holes, and bit them. In this situation a ship is fitted for sea, by regularly stowing her ballast, and getting on board her rigging, stores, &c. See BALLAST.

A great number of moorings of this sort are fixed in the harbours adjacent to the king's dock-yards, as Deptford, Chatham, Portsmouth, Plymouth, &c. Falconer.

When a ship is come to anchor in a situation where she is to remain, she is secured by moorings. It is of essential importance that she should be well secured by mooring; the practice of which must depend upon the variety of situations, the settings of the tides, and other circumstances. When the best bower is gone, and about the length of two cables is run out, the small bower is let go; and, when that has

taken the ground, you heave in one cable's length upon the best bower, and veer away a cable's length of the small bower; and thus a ship is kept at an equal distance between both, the one lying to the head, and the other to the stern. In roads where there is much tide, and freshes are expected, ships moor according to the set of the current, one anchor riding to the flood, and the best anchor and cable to the ebb. In roads where there is little or no tide, ships moor according to the set of the most prevailing wind on the coast. It may so happen, according to circumstances of situation, that the vessel must ride by a greater scope on one cable than the other, but still the manner of letting go the anchors is the same.

Another method of mooring is by carrying the last anchor out in a boat to the place appointed, and then letting it go. Steadying or mooring with a kedge is usually done in this manner.

Mooring with two, three, or more anchors a-head is performed by letting go the number of anchors necessary, and veering away. This practice is adopted in cases of danger, and must be guided by circumstances; e. g. if one ship cannot clear the shore under her lee by failing, on account of a strong wind and high sea, the only resource is to let go all the anchors in the most advantageous manner possible. For this purpose, let the cables that are bent be got clear for mooring; then furl all the square sails as speedily as possible, and shoot the ship along the shore under the stay-sails. When the square sails are furled, let go the weather-moist anchor, and veer away the cable quickly; then let go the next weather-moist, and so on, till all the anchors are gone nearly in a line along the shore: thus when the ship becomes windward, all the cables may be made to bear an equal strain, and are separated from each other. For other methods of mooring in a tide's way, or in a storm, of backing an anchor, by letting go a small anchor a-head of a large one, to which it is fastened, and of keeping a clear hawse, we refer to the "Elements and Practice of Rigging and Seamanship," vol. ii.

To MOOR *across*, is to lay out one of the anchors on one side.

To MOOR *alongst*, is to have an anchor in a river, and a hawser on shore.

To MOOR *quarter shot*, is to moor quartering between the two first ways.

MOORING *for east, west, &c.* is when they observe which way, and on what point of the compass the wind or sea is most likely to endanger the ship, and there lay out an anchor.

MOORING *a fair birth*, at Sea, is mooring in a place free from any annoyance.

MOORING *a proviso*, is to have an anchor out, and a hawser ashore; then the ship is moored with her head ashore: and two cables are the least, and four the best to moor by. See ANCHOR.

MOORING *water-shot*, is to moor neither alongst nor athwart the tide, but quartering between both.

MOORING *Point*, in Geography, a cape on the S. coast of the island of St. Christopher; two miles S.E. of Basse-terre.

MOORKYN, a town of Hindoostan, in the circar of Gangpour; 10 miles N.E. of Gangpour.

MOORLEY, a town of Bengal, capital of the circar of Jaffore; 55 miles N.E. of Calcutta. N. lat. 23° 10'. E. long. 90° 21'.

MOORS. See MOROCCO.

MOORS, in the Isle of Man, those who summon the courts for the several *beadings*; such are the lord's bailiff.



Every moor has the like office with our bailiff of the hundred.

**MOORSBEDABAD**, in *Geography*, a city of Hindoostan, in Bengal, situated on the western arm of the Ganges, which is here very low in the dry season, about 12 miles from it, and about 120 miles above Calcutta. It was the capital of the Bengal provinces, until the establishment of the British power; and even long after, it was the seat of the collector-general of the revenues; being a more central situation than Calcutta. It is very large, but ill built; and in its plan so very irregular, that it is difficult to estimate the quantity of ground upon which it stands. It is a modern city, and does not contain any magnificent buildings, either public or private: nor was it ever fortified, except by an occasional rampart thrown up round it, on the intrusions of the Mahrattas in 1742. It is now decaying, especially since the removal of the board of revenue to Calcutta, in 1771. N. lat.  $24^{\circ} 11'$ . E. long.  $88^{\circ} 26'$ .

This city was founded by Jaffier Khan, then called Mursheed Culi, who removed the seat of government thither from Dacca, and gave his own name to the new metropolis.

**MOORSOON**, a town of Hindoostan, in Orissa; N.E. of Boad.

**MOORUDE**, a town of Hindoostan, in Dowlatabad; 10 miles W. of Carmulla.

**MOORY EARTH**, in *Agriculture*, that sort of earth or soil that is prevalent on moors. It is in general a very fine black mould, sometimes found under a pretty thick sward or grass, but more frequently under moss, or straggling plants of heath. It differs from peat in that it does not stick together, nor has the fibrous roots, or bituminous adhesive quality of it: peat, when dry, becomes hard and firm; this falls into powder. It is of a spongy nature, and ready to imbibe moisture, which adds considerably to its weight. There is commonly underneath it, as under most earths of this kind, a bed of clay, or some substance impervious to water: so that the particles of bodies decayed on the surface, not being admitted into the soil, remain upon that surface dry, and increase its thickness, according to the continuance of the cause. When this kind of soil is collected in a place where running water, in rainy seasons, brings with it loam or other rich soils from the neighbouring grounds, it then acquires a greater degree of cohesion, hardens when dry, and resembles the cleansing of ponds more than the former.

But the most considerable soil of this kind is the sort called peat. This is usually full of roots of weeds, and even of trunks and branches of trees and other plants. It always contains a bituminous substance, which renders it very inflammable when dry; at which time it also becomes very hard, though it is quite soft when in the bed in which it lies; being easily cut. It is observed by Mr. Maxwell, "that the whole mass and body of this soil is a dunghill made up of rotten timber, grass, weeds, and often mud washed from the higher grounds about it, by the land-floods; than which there are few richer compels."

It is believed that "the qualities of moory grounds, especially the mossy kind, differ very little from one another in any other respect, than with regard to the better or worse quality of the earthy material which makes a part of their composition, and the difference of their depths. They are more or less spongy, in proportion as this rich material fills up the cavities of the component vegetables, which are preserved from putrefaction by the acid in the water. The less spongy, and the more rotten the earthy matter is, the sifter it is for the vegetation of any thing planted in, or sown on them."

**MOORY Land**, such sort of land as is principally constituted of earth or soil of the moory or mossy kind. These lands are of different sorts according as the earthy stratum is of greater or less depth. Mr. Marshall has observed, that "the soil of the Highlands of Scotland, compared with that of the moor lands of Yorkshire, has a decided preference; unless upon the summits of the higher mountains, and where the rock breaks out at the surface, or where this is encumbered with loose stones or fragments of rock; the hills of the Highlands enjoying some portion of soil or earthy stratum between a thin coat of moor; while on the Yorkshire hills, the moory earth, generally of a greater thickness, lies on a dead sand, or an infertile rubble without any intervening soil." And "from the sort of general knowledge which he must necessarily have of both districts, he is of opinion, that the Highland hills (apart from the summits of the higher mountains) are of three or four-fold the value of the eastern moor lands of Yorkshire; more especially of the central and southern swells: the narrow tract which hangs to the north between Guisborough and Whitby, is of a better quality; very similar in soil to the lower hills of the Highlands."

A great part of the moory lands of Lancashire is probably equal if not superior to either of the above, as having more depth and a better sub-soil.

It is evident that the improvement of moory lands must be effected in different methods according to their particular natures, situations, and circumstances. The first thing to be done, in order to the improvement of moory lands, is to divide them into proper inclosures: not only to secure their future produce, but also to have a means of procuring rich earth to cover the otherwise insipid useless mould on the surface, and give root to the plants which may afterwards be cultivated on them. Then, as the natural produce of this earth is of no value, its surface should be pared off, in order to be burnt. If the depth of the moory earth be not very considerable, the surrounding ditches, which make the inclosure, will afford a rich strong soil, which should be spread about three or four inches thick all over the surface. When the clods are burnt, their ashes should be mixed with this new soil. If no proper earth can be got from the ditches, sand or gravel may be used with success. Gravel is singularly beneficial to such lands. The Berne society, which long since recommended this method of improvement as founded on repeated experience, very properly states, that the good effects of the sand and gravel will be considerably increased by a moderate mixture of dung, and that, especially if the ground be intended for ploughing, this covering should be at least a hand's breadth in thickness. Dung alone would undoubtedly be extremely efficacious on all such soils, in which it is remarked to be of longer service than any other; but a farmer can seldom spare a sufficient quantity of it to go far enough unmixed, or indeed for mixing. In this case, other ingredients must be resorted to, though the sand, or gravel, will generally do great things without any mixture. Well preserved ashes will be of excellent service, and so will the rubbish of old buildings, or any other similar substance, when mixed with sand or gravel, even of the coarser kind, and incorporated with this naturally rich earth, which, were its real value known, and the proper method of managing it understood, might claim a preference to any other soil. Loam is still better than either sand or gravel. This should be brought on before the fires are lighted to burn the surface of the moor, and should remain in heaps till it can be equally mixed with the ashes. Lime, where it can be had, will also contribute to the meliorating of mossy grounds, and is very



very effectual in removing the heath of those of the moory kind, as is experienced in Lancashire. The moory earth, thus covered, is fitted for various kinds of crops.

A late practical writer has suggested, in respect to the thinner sorts of lands of this description, that "heath, is a sort of plant that for the most part infects those soils that are of a moory nature, and in which there is but a small proportion of vegetable matter, on account of there being few leaves or other vegetable products, except the heath itself, to be converted into mould; and that the recrements of this plant are not found to afford improvement to the soil on which it grows, in the way that is experienced to take place from the decay of many other more saccharine, mucilaginous, and juicy plants. Hence it probably is, that the heathy soils are mostly so poor and unfriendly to the growth of useful crops, whether of the grain, leguminous, or grass kinds." In bringing this sort of land into the state of cultivation—"as it has been found from repeated trials, that where the heath is turned down without being removed or completely destroyed, it keeps the furrow-slices from coming into intimate contact with each other, so as that by confining and retaining a due degree of moisture, the decomposition and decay of the heath may be quickly effected, and the soil of course in too open and loose a state for the growth of almost any crop; it should be cut as close to the surface of the ground as it can be conveniently done; or, what is probably a better practice, removed, by paring off a very thin slice of the surface ground with it, and then either consumed by means of fire, or applied to such other purposes as may be necessary."

And after noticing the uses of long heath in thatching, forming rinees for milk vessels, and in making concealed drains, Mr. Headrick, in a paper in the second volume of Communications to the Board of Agriculture, remarks, "that in the dry spring months it is capable, in many cases, where it grows high and of considerable closeness, of being burned without the labour and expence of either of the above operations. But in all cases where fire is employed, as the staple of soils of this kind is seldom deep, care should be taken that the combustion be not carried to too great a height, so as to prove injurious by consuming the small portion of vegetable material that may be present. The operation of cutting the heath, may be most conveniently performed by an implement of the scythe kind, only made much shorter and of greater strength, so as not to give way or break by the stiffness of the stems of the plants." And that "the heath having been removed in some of these ways, lime in its caustic or most active state is to be applied in large proportions, either over the whole of the surface before the ground is ploughed, or upon the soil when turned up. The former method is, however, to be preferred, as coming more intimately in contact with the plants, where lime is scarce, and cannot be laid on in large quantities; but where it is plentiful, the employing it in both ways might be more beneficial, by its thus tending more readily to the destruction of the roots as well as the stems of the plants. Where it can be procured, lime should, however, always be put on in large proportions on first bringing heathy or moory soils into the state of cultivation, as little savings in this respect, in the first instance, may often prove highly disadvantageous in the end." It has been observed by an able writer, that experience has proved that the addition of lime to the ashes of the pared surface operates much more beneficially than if spread in any other manner: and that the larger the quantity the greater the effect, and probably the greater the proportional effect; that is, six chaldrons an acre will do more than twice the good of three chaldrons; the chemical effect both in neutralizing the acids

found in all these soils, and also in destroying the roots left of the spontaneous growth, depending in some measure on the effect taking place suddenly.

A writer in the twentieth volume of the Annals of Agriculture, states, "that eight chaldrons an acre, laid on at once, have converted a moor into meadow worth twenty-five shillings an acre; but the same moor, under one chaldron *per acre per annum* for eight years, has not been worth seven shillings and sixpence an acre. The effect of lime on all soils long in cultivation is problematical, and does not answer the expence in one in ten; but in new moor lands the effect is prodigious and hardly credible: laid on ling mountains without tillage, without paring, or other operation than merely cutting the ling, and spreading the lime, such moors have been changed from one shilling to twenty shillings *per acre*; but the quantity has been fifteen or twenty chaldrons *per acre*." It is, however, noticed, that "the application must always be regulated by the circumstances of the case. Where the expence *per acre* is forty or fifty shillings, the improvement will ultimately come high. And in order that the calcareous matter may be as intimately as possible blended with the particles of the soil, and thereby exert its effects most extensively, it should be applied over the land in the most perfect state of pulverization, and as equally as it is possible to spread it out. Where the lime is applied with sufficient attention to these circumstances, it generally destroys the heath in a short time, probably in some measure by its powers of attracting moisture from the soils, and combining with the acid astringent juices of the heath plant, and rendering them incapable of affording that kind of support which is requisite for its healthy growth, as well as by the alteration of texture that is produced in the land, and the caustic destructive action that may take place in consequence of its coming into contact with the roots in that state. This is probable, from its being found to be the most effectual, when laid on such lands in the state of quick-lime, though something may no doubt depend on the eagerness with which moisture is attracted by it in such cases. After the lime has been applied, especially where the surface has been pared off and consumed by fire, the ploughing should only be slight, so as to blend it and the ashes with the soil, but not to place them at a great depth below the surface of the land.

However, where heathy or moory land has a higher degree of surface wetness, and is not so much over-run with the plant as to prevent its being employed as pasture, it may sometimes, it is observed, be brought into cultivation by merely removing the super-abundant moisture by proper drains, burning the heath in the spring months when suitably dry, and afterwards pasturing it closely with sheep, so as to keep it from seeding; as in this way, in time, it in some cases becomes wholly removed from the soil. And when this sort of ground has been broken down and pulverised as much as possible, by the operations of ploughing and harrowing, it should always, where not too stiff, be sown with some sort of close luxuriant green crop, such as turnips, peas, and tares, that may be fed off by sheep; but where it has a sour quality, and is more stiff, clayey, and adhesive, those plants that strike more deeply into the soil, as beans, Swedish turnips, buck-wheat, rye, and oats of the grey kind. In many cases too, rape, peas, clover, and vetches, will succeed in a very beneficial manner. But as the principal intention in most cases of breaking up this sort of land, is that of bringing it in a cheap and expeditious manner to a suitable condition, after a grain crop or two, for growing grass, the green crops, of whatever description they may be, should be consumed by animals upon



the ground, especially where the soil is such as to admit them without injury; as in this method, a high degree of fertilization and improvement may speedily be obtained, at little or no expence, from the great benefit the animals receive. If it can be conveniently done, two or more of this sort of crops may be consumed on the land, in the same season with still more beneficial consequences. Where the soil is too wet, stiff, and poachy, to admit of this practice, the crops may be drawn or cut, and converted to the feeding of cattle in the house. It has been well suggested in the Annals of Agriculture, that proper cropping "is the key-stone of the arch;" and that if it be not attended to with great care, the whole of the improvement may turn out disadvantageous.

There is also another method of improving these soils by such crops as the above, which is that of turning them down, when in their most succulent states, by the plough. This may be a judicious and useful mode on the drier and more sandy descriptions of these soils, where they may readily undergo putrefaction and decay, but in the more tenacious sorts, and where there is a four disposition that would greatly retard the process, it would seem to be much less beneficial than that of feeding them off by some sort of live stock. On the whole it is concluded, that in whatever method they may be brought into the state of cultivation, the processes of tillage should not be carried further than the destruction of the heathy or other coarse plants, and the removal of the four and unfriendly disposition of such soils for the growth of useful vegetable productions. They should be then restored as soon as possible to the state of grass or pasture, as that is the proper application of them.

In the Perthshire Agricultural Report, it is stated, that some practical improvers on these thin moory soils pare and burn, then spread the ashes with a little lime, sow turnips, to be fed off the first year by sheep, the second year plough again for turnips, and feed them off in the same manner, then lay the lands down with barley and grass seeds. This is, the writer says, the practice on the Nairn estate betwixt Perth and Dunkeld. On the opposite side of the Tay, it is the practice of another improver to plough the moor in the winter, letting it lie in this state all the next summer, ploughing it from three to five times in the following summer, as may be necessary; then to lime and sow oats the third spring, laying down with a crop of barley and grass seeds in the fourth year. Some, with the intention of being more expeditious, begin by trenching through the winter, at the expence of four pounds the acre, for a crop the succeeding spring. This is the practice in the district between Perth and Coupar. Some suppose that paring and burning should be practised on the thinnest soils of this sort, when the sub-soil is gravel or sand, under the idea that all moory lands should be treated in the same way, and that not a particle of earth can be destroyed by the process, which puts the able writer in mind of boys, who white a stick for a certain purpose, until it be so worn down that it becomes useless for any purpose whatever. And an opinion of other improvers of moor is, "that the land ought to be ploughed, and lie in that furrow for one year; that against the succeeding spring and summer, it ought to be cross-ploughed and harrowed, till the clods are reduced, limed the next autumn, drawn in ridges, and ploughed for the seed furrow in spring. This method of reclaiming moors is recommended by a gentleman's factor in Strathearn, and is very similar to the practice betwixt Perth and Coupar. Both have this to recommend them, that the quantity of soil is not diminished, where there seems so little to spare." And Mr. Buchanan of Camfmore, in the neighbourhood of Perth, who has im-

proved upwards of five hundred and fifty acres of new ground of this kind, (which is as much perhaps as any other person in Perthshire has done,) "lays lime on the surface in the summer or autumn, and leaves it generally for two or three seasons, spread in this manner, that it may sink into the ground and mix intimately with the soil. If the land has been well limed, the first crop will be tolerably good; the second heavy; and the land is by this time so well pulverised, that it is easily made for barley and grass seeds the following year. In some cases, he interposes a fallow crop of potatoes or turnips, between the second crop of oats and the barley crop. By this management, he has seen on his new ground, the two first crops of oats remarkably good; the second especially, which exceeded six bolls an acre. His moors cultivated in this manner, where the ground was high, the heath as tall as a person's knee, and the soil not worth one shilling an acre in its former state, have continued to carry grass crops, and let at between nine and ten shillings of yearly rent, for the space of twenty years, without any future dressing, and without any symptoms of the heath attempting to arise. Farmers may grudge to lose the interest of money laid out in lime, for the two or three years before the land be in crop; but this is a fallacy; the interest is not really lost. The soil is meliorated to such a degree by the top-dressing of lime, that the grass raised thereby does more than repay the interest of the lime. Much expence is also saved by ploughing only once for every crop of oats." The writer further remarks, that "there is a certain barrenness of soil, in which the heath delights; and whenever that barrenness is removed it does not thrive; neither does it thrive in the other extreme of the poorest soil, and most exposed situation. To every plant there is a particular quality of soil, a certain degree of moisture, of warmth, and exposure which is natural. Different plants, as well as different animals, have peculiar climates, which are accommodated to their constitution; and even in the same country, one species of plant is found in the valleys and another in the hills; nay, in the same field and soil, if its nature and qualities be changed by cultivation, its productions will change of course. Allow your drains to stop in a field which had once been properly dressed; let it become sour, spouty ground, it becomes instantly filled with *sprits*, rushes, and other aquatics." But "drain and cultivate the same field again; these coarse grasses disappear, and others which are peculiar to dry land succeed in their place. Fold sheep, lead rivulets, or lay enriching manure on the most barren ground, which is not overcharged with water, and the richest carpet of close fine grass will spring up spontaneously. Remove these before it be fully saturated, and it will gradually return to its former fertility. Were all plants fitted by nature to thrive only in the same circumstances, we should have, at least, half of the globe without any plants at all; what might therefore appear, by superficial observation, to be a nigardness in nature, or a defect in the bounty of heaven, is, upon a closer inspection, recognized to be the effect of consummate wisdom, and of goodness without bounds. From the frozen tops of the highest mountains down to the bottom of the warmest valleys, every degree of heat and cold, of barrenness and fertility, of wetness and dryness of soil, providence has adapted to the nature of particular plants, which come to perfection where another species could not live; and these various plants are the food of different animals, that no creature might be deprived of nourishment peculiar to its kind." In short, "without entering on that polemical point in agriculture, the food of plants, (which has been long a problem, and will probably remain to be solved by future ages,) we may safely



safely remark, that whatever is their food, they are taught by nature to seek after that food which suits their kind. They uniformly reject other food; and when forced, by the unskilfulness of man, to accept of food unsuitable to their constitution, they soon decay. It is, therefore, probable, that the food of all plants is not the same; but that some of them prefer one kind of food, and some another, and these in various degrees. At any rate, whatever their natural aliment is, or when the earth is brought by industry to have that aliment, there we uniformly see them making their appearance; and yet we cannot rightly tell how."

There have lately been great improvements made on different sorts of moory lands in Yorkshire, where there are immense tracts of moors. In the Agricultural Report of the North Riding of Yorkshire, it is stated, "that an improvement was made upon Lockton moor, about six years since, on a quantity of land of about seventy acres, which would not let for more than 1s. *per* acre, before it was inclosed. Of this, forty-eight acres were pared and burnt, and sown with rape, except about an acre sown with rye; the produce about sixty quarters. The rye grew very strong, and in height not less than six feet, and was sold, while standing, for five guineas the acre. The land was only once ploughed, otherwise the crop of rape would probably have been much better. One hundred and twenty chaldrons (each thirty-two bushels) of lime were ploughed into the field; which, for want of more frequent ploughing, probably was not of the service it otherwise might have been. Part of the land was afterwards sown down with oats and seeds; the former of which afforded but a moderate crop, the latter a very good one, and has since produced two loads, 120 stones each, *per* acre. The seeds sown were rye-grass, rib-grass, white clover, and trefoil; of these, the first succeeded amazingly, the others not so well; potatoes thrived very well; turnips not equal to them. A farmhouse has been built upon it, which now, along with five acres more of the same kind of land, is let on lease, at 30l. *per* annum. The soil consisted, in general, of benty peat, upon red grit-stone, with a mixture of clay upon lime-stone; this last is, in some places, at a considerable depth, in others, sufficiently near the surface for lime to be burnt upon the premises."

But it is stated "that the greatest and most profitable improvement the reporter has met with, is one made by Richard Simpson, at Samtoft, upon Pickering moors, of which he has given the following circumstantial account. The land was allotted to him on the inclosure of the common of Pickering and Newton. The allotment contained 315 acres, and was situated on the northern verge of those lime-stone heights which border the valley in an east and west direction for above thirty miles, from near Helmsley to Scarborough. To the north of this tract of limestone, which, in most places, rises with a gentle slope from the plain of the vale, and bears a breadth of two or three miles, lies the wild, and chiefly uncultivated tract, called Black moor, which cannot contain less than 300 square miles, not one-tenth part of which is in a state of cultivation. The soil of the farm may be classed in this way.

*Class 1.*—One hundred acres pretty strong loam, of a moderate depth, upon limestone.

*Class 2.*—Seventy acres of a deep sandy soil, with more or less of a red-stone earth intermixed. These two classes were over-run with heath, or ling, in patches, with brakens (fern), and a tough mossy herbage intermixed.

*Class 3.*—One hundred and forty-five acres of a black moory soil, covered with an uniform coat of heath, with a

few brakens, and here and there a few tufts of bent grass intermixed.

It is suggested, however, that although the upper soil of this last class was nearly alike, consisting of half putrified heath, intermixed, like all the upper soil of the dry part of the moors, with black and grey gritty (chiefly siliceous) sand, and had occasionally, while common, been pared for turf for fuel, yet the sub-soil, in different parts, varied materially; and on that difference of sub-soil he founded his hopes of improvement, and he was not deceived in the event. About 100 acres of this last class, although the upper soil was uniformly black, and in some places two, in others, from that to six inches thick, yet the soil beneath had every appearance of what, had it been on the surface, he should have called a light sandy loam intermixed with a freestone-gravel, and had, undoubtedly, once formed the upper soil, before the ling or heath had encroached upon and destroyed the other grasses, which, in all probability, existed there: this is a process which is going on every day, and has undoubtedly taken place on most of the borders of the moors to a considerable breadth; for ling will thrive on almost any soil, and remarkably well on a light sandy loam; and being a perennial, and he may add, a permanent plant, retaining its stem and branches all winter, and its stems generally rising above the surface of snows, its seeds are carried thereon by the winds to considerable distances, where being lodged, on the melting of the snows, and vegetating, the ling produced gradually destroys the more tender grasses growing in its shade: add to this, the soil produced by the gradual decay of the ling becomes continually more fit for its propagation, and more unfit for the produce of almost every other species of vegetables.

And "the remaining forty-five or fifty acres had an upper soil, similar to the last described, and a sub-soil of a hard-cemented grey sand, of a most unpromising appearance, as impenetrable to water as the closest grained stone, and almost as hard; and, what was worse, this stratum was too thick for the plough to penetrate through it. This is the worst species of land he has seen upon any part of the moors; for the produce of any kind of corn, even rye (except in patches), going off before it shoots into ear, although remarkably healthy and vigorous until the period immediately preceding its shooting, which he supposes must be owing to its then sending forth roots to derive nutriment from a greater depth, and meeting with this sub-soil totally unfit to afford that nutriment, it withers and dies. This happens alike in a wet or dry season; and yet even this land, where lime may be had at a moderate rate, may be appropriated to some purposes with benefit to the proprietor; for, when pared and burnt, and well limed, both white clover and rye-grass thrive on it remarkably well.

It is remarked that he has been thus particular, because being well convinced that there are some thousands of acres on the borders of Black moor, and in patches adjoining several of the small cultivated vallies that run through it, of a soil and sub-soil similar to the hundred acres of the third class above described; and as this land, where lime can be had at any reasonable price (as from 3d. to 6d. *per* bushel) will pay very well for cultivation, being most of it fit for the produce of either rye, turnips, or oats, at the first, and what is not so, being sown with rye, and laid down two or three years with grass seeds, will then produce turnips and oats; and on all of it, white clover and rye-grass will succeed remarkably well, particularly the former: if the owners of such lands could be induced, by a more minute ex-



mination of the soil, and more particularly of the sub-soil, to bring them into a state of cultivation, it would not only be a benefit to themselves, but of public utility; for in their present state, they are worth a mere nothing, not 6*d.* an acre.

It is added, that on entering on the above farm in the year 1787, it was evident, that the nature of the mossy herbage, intermixed with patches of ling, on even the best of the limestone and sandy soils, indicated paring thin, and burning, as the best husbandry; so indeed he thought, and so in general acted; but being a young farmer, and having frequently heard it asserted, "that to burn soil was to destroy it," he ploughed out ten acres of the best herbage, and the most free from ling, on the limestone soil, without paring; he may add, that he had sufficient cause to repent it, for he has not even had one middling crop from it since; and although laid down with seeds, they have by no means so good an appearance as those sown the same year on similar soils, although he has expended as much lime and manure on this as on any part of the farm.

And it happened to him likewise, that paring and burning the black moory soil on a good sub-soil, would answer a doubly good purpose; for by paring tolerably thick and burning, he not only changed the worst and least putrified part of the soil into good ashes, rich in alkaline salts, but, by so doing, he brought the sub-soil within the reach of the plough, and could, at pleasure, mix it with the remaining black soil, and expose it to the influence of the air and other causes.

It is further stated that he kept, likewise, another object in view, and that was, to begin with a larger proportion of the best and most productive land, and a smaller of the worst, that, by so doing, it might not only pay for its own cultivation and improvement as he proceeded, but that he might get into a better stock of manure. The first year he pared and burnt 120 acres, *viz.* eighty of the classes one and two, and forty of class three. On most of this, three chaldrons (of thirty-two bushels each) of lime were laid on each acre, but on part of it only two: he was induced to do this, because although our present chemical knowledge of the properties and component principles of lime is very confined, and we are utterly ignorant of its mode of acting as a manure, yet it is known that lime and alkaline ashes mutually assist each other's action, as manures, in a very eminent degree, and that if lime is intended to be used at all in a succession of crops, it is always best to lay it on with the ashes. On such parts of these eighty acres as were got burnt, &c. previous to the beginning of May (about fourteen acres), he sowed oats, with once ploughing, and had a tolerable crop, *viz.* near seven quarters *per* acre. He sowed forty acres with rape, with once ploughing,—produce, in 1788, 160 quarters, four quarters *per* acre: the remaining twenty-six acres he sowed with turnips, ploughing once, and had a very good crop, which was eaten on the land with sheep, and was succeeded with oats, above seven quarters *per* acre.

And the ten acres he had this year ploughed out without paring and burning, were a similar soil to the above eighty acres, most of it class one. He sowed this with grey peas; produce not a quarter *per* acre.

But the forty acres of class three he pared thick, burnt, and laid on about three chaldrons of lime *per* acre. Such part of it as had the best sub-soil he ploughed in May, and harrowed and cross-ploughed the latter end of June, and sowed with turnips, which bring a tolerable good half crop,

were eaten upon the land with sheep, and succeeded, 1788, by a crop of oats of from five to six quarters *per* acre. Being in want of herbage for sheep, he sowed down this field, about fourteen acres, with seeds, along with the oats, *viz.* white clover, about five pounds *per* acre, and the common hay-seeds of the country, about five bushels *per* acre: they came remarkably well: and the year following, this field was almost an entire sheet of white clover. One thing in this field deserves remark: about an acre of it, of as good a soil as any of the rest, was not limed; the consequence of which was, that although not perceptible in the turnip crop, it was very much so in the oats, and still more in the grass-seeds; very little white clover was to be seen: and now, although the other parts of the field have a tolerably good herbage, with a few thinly-scattered small branches of ling coming amongst it, (owing, he supposes, to its not having been long enough in tillage to destroy all the roots of this hardy plant), yet that part of the field *unlimed*, is nearly *destitute of herbage, and covered with heath*.

However, about sixteen acres, the other part of this forty, being of a somewhat inferior sub-soil, and the black moory soil of a greater depth, he sowed with turnips, with once ploughing. These were a very poor crop, the bottoms in general not larger than the common hedge crab: they were eat with sheep in the autumn, and the land sown with rye, which produced about two quarters *per* acre. Grass-seeds were sown amongst the rye, in the spring of 1788, in the proportion last mentioned: they came remarkably well; and the herbage the two following years was almost entirely composed of white clover. The remaining ten acres were of the cemented sandy sub-soil above described. A little turnip seed was likewise thrown upon it, after once ploughing, which produced a few dwarf tops, but no roots that were eatable. These tops, or leaves, were eat with sheep in the autumn, and the land then sown with rye, and with grass-seeds in the spring following, in the same quantities as the last mentioned. Produce of rye, six to eight bushels *per* acre, and these of inferior quality. The grass-seed came remarkably well; and even on this soil the white clover, for the first two years, was in far greater quantity than all the other grasses put together. The herbage of these forty acres, being adjacent to the farmstead, is yet of tolerable quality: but here and there a sprig of young heath. He intends, therefore, to plough it out the next spring, and relay it with grass-seeds, after another succession of crops.

The writer proceeded in this manner in 1788, 1789, 1790, and 1791, in which year he had gone over all his farm, except a few acres situated on hill sides, the declivities of which were too steep for ploughing. He constantly pared, burnt, and limed, as above, but varied occasionally the crops. What, after the experience he has had, he would recommend as the best course for a black moory soil, is to pare, burn, and lime, plough twice, and sow rye in the autumn of the first year: to fallow for turnips for the next crop. If a little manure can be had for the fallow, there is a greater probability of the turnips succeeding; and if manure is not to be had, the lime and ashes, with the melioration of the air the soil has already received, will, he says, render it much fitter for a crop of turnips than it was when newly opened. On these dry light moory soils, the turnips should be constantly eaten upon the land with sheep, and may be succeeded with oats or rye, according to the better or worse quality of the sub-soil. With this first crop, after turnips, the land ought to be sown with seeds, in which white clover and rye-grass ought to be in the greater proportion: in grass, it should lie three, four, or five years, as pasture-ground;



ground; when on being ploughed out again for another succession of crops, as in the manner below,

Oats,  
Turnips,  
Oats, with grafs-seeds; or  
Oats,  
Turnips,  
Rye, with grafs-seeds;

and on the worst sub-soil, grey peas or rye, then turnips, to be followed with rye with grafs seeds; it will generally be found, that the soil will be in a much fitter state for the production of these crops, than in the first succession, always remembering to lime for the turnip crop, and, if to be had, to lay on a little manure likewise. And as no more than two crops ought to be taken for one fallow on any light upland-soil, perhaps the best mode of opening out-lands of the description of class one and two, is to pare, burn, and lay on three or four chaldrons of lime *per* acre with the ashes, to plough twice for turnips, to eat them on the land with sheep, and to fallow with oats, &c.; and after one or two successions of crops, the land ought to be laid down with grafs-seeds, always remembering, whatever the succession, to lay down the first year after a fallow, when, after a few years rest, it may be ploughed out again with advantage.

It is concluded that as the lands of class one and two, and the better sorts of class three, are brought to an immediate state of improvement, and the profits arising therefrom are evident from the bare inspection of the crops, it will be only necessary to compare the expence and improvement on the worst species of land in class three. This he states to be as below.

*Expences, &c.*

	£	s.	d.
Paring and burning one acre, and spreading } the ashes - - - - -	0	18	0
Three chaldrons of lime, at 7s. - - -	1	1	0
Leading and spreading ditto - - -	0	6	0
Six ploughings for a succession of crops, as } rye, turnips, rye - - - - -	1	10	0
Six harrowings for ditto - - - - -	0	12	0
Rye-feed, and turnip-feed - - - - -	0	16	0
White clover and grafs-seeds - - - - -	0	10	0
Harvesting two crops of rye - - - - -	0	10	0
	6	3	0
First crop of rye, eight bushels, second } crop, 12 bushels, at 3s. 9d. <i>per</i> bushel	3	15	0
Eatage of the turnip crop, about - - -	0	5	0
	4	0	0

So that there will be a loss of 2l. 3s. *per* acre; but then it is to be considered, that the herbage of the first three years is worth more than 10s. *per annum*, and that the soil, by the operation of the lime, is in a continual state of improvement; and has every appearance of being worth 5s. *per* acre to farm. He owns he should not have attempted to cultivate land of the last description, had it not unavoidably fallen within the ring-fence of the farm; and being already inclosed, there was a greater probability of its paying for the improvement.

He states that the great error into which many, in his recollection, have fallen, in opening out-land for the first time, is, the ploughing out the tough mossy sward without paring and

burning; the consequence is, that for the first four or five years there is an almost total failure of crop, and, of course, a want of manure for the next succession. This is done under the mistaken idea that by burning, so much of the soil is almost totally dissipated and lost. Now, although we are in want of experiments to make it evident, what greater proportion of vegetable matter is dissipated in suffering combustion with a slow fire, and in contact with earthy matter, than would be dissipated in the same undergoing putrefaction; yet we know, that as all vegetable soils contain more or less of calcareous earth in its mild state, the subjecting this to the action of fire, must increase its activity as a manure, by bringing it nearer to the state of quick-lime, and that the siliceous and argillaceous parts of the soil are not dissipated in burning. Modern chemistry will throw much light on this subject. It has been observed, however, by others, that paring and burning have very different effects, according to surface and soil: it is an expensive operation, and can only be repaid by one or two succeeding good crops. In good soils, no doubt of the propriety; but where ling abounds on a thin soil, with gritty pebbles, they are confident as much may be done by burning the ling, ploughing, and letting it lie six or twelve months, then harrowing, liming, and taking two or three turnip-crops, grafs-seeds, and no corn: this should be done by the land-owner; no tenant will be at the expence. When land falls into their hands, it is exhausted by crops of grain, and then the land is condemned, as having been good for nothing; whereas, these lands are grateful, when properly laid to grafs, and will, by sheep-grazing, arrive, at a future time, to afford profit, and some improvement, under the plough. The first of these writers is "far from asserting, that a soil will not become thinner by repeated burnings; but he is of opinion, that it will not become so in the degree generally imagined; and he is an advocate for only the first paring and burning of very old sward, or heath." By others, however, it is said, that "much depends on the situation of the improver of this land: it must be supposed he has a farm of old land, and this new falls by a division of common. In this case, the rent of the new is of no consideration: he can, in September or October, easily spare his ploughs, when he feels little expence in ploughing fifty acres; if it lies even twelve months, where is his loss? It is gaining from the seasons. Cross-plough and harrow well; the spring following, plough, lime at the rate of two or three chaldrons *per* acre, not more; turnip, eat with sheep, then break the tough sod; turnip again, without lime: your sod is now acting in part as manure. In the spring, use the same quantity of lime, and sow grafs-seeds. Here is no advantage in having oats; the land is hurt by it. If paring such land was abolished, it would prevent such crops. Ploughing up is slow; but the land is meliorating, and the sod adds to the soil; and it will be found, in future, grafs. He has a proof of this management on a turfy thin soil, within a few inches of sand sub-strata: had this been followed up with oats, he should have got into the sand." On this it is remarked, that the above writer "seems to conclude, that if land be pared and burnt, corn must be grown thereon. This is not a necessary consequence. If he is going to improve any of these moor lands, the first considerations are, what does he want to obtain?—Improvement of the land.—By what means can he best obtain that?—By producing the largest quantity of food for sheep.—How is this to be obtained?—By paring and burning, and the use of lime; and by those means, a larger crop of either turnips or rape may be obtained, than by lime without paring and burning; and the better the crop of turnips that is obtained



tained the first year, the better the second year ; and the better the crops of turnips are, the better will the grafs be in the future years.

Various other improvements have been made in this part of the kingdom, on lands of the moory kinds.

It has been suggested by Mr. Marshall, that in the deep kinds of moory lands, or those of a morassy nature, after freeing them from superabundant moisture by proper draining, the proper means of bringing them into a state of cultivation, so as to be let, at their full value, to ordinary tenants, are the following :

"The first work, in a large undertaking, is to divide the scite of improvement into fields, suitable to the farm or farms to which they are intended to be laid, with ditches running in such directions as will lead off surface-waters, without the expence and incumbrance of deep open drains within their areas ; then to adjust the surface of each field in such a manner as will shoot off rain-water into the intersecting ditches : in order that, should a fall of rain happen during any stage of the process of culture, the work may not, for any length of time, be impeded." And that "as the surfaces of lands of this nature are mostly rugged, uneven, and of a loose spongy texture ; this generally renders them unfit for the operations of tillage without some previous assistance of manual labour. And when the moory earth, or vegetable mould is deep, and rises to the surface without any covering of fossil substances, it requires some length of time to bring it to a texture sufficiently firm for the ordinary purposes of aration. Hence the general principle of improving deep moory lands, which have not been supplied by nature or art with fossil coverings, evidently appears to be that of converting them to the state of profitable herbage, before the production of corn-crops be attempted." In effecting which, "the process will ever be the best directed, by the existing state of the scite to be improved. If the inequalities of its surface are large and abrupt, the first business is to adjust it, so far as to admit of the operations of tillage, whenever they may be required, and can be properly performed ; as well as to convey off surface-waters in the way already suggested. And this done, to pare off the minor protuberances (the tufts and haffocks formed by particular plants in its watery state), and more or less of its surface in general, so as to cut off the plants and stale mould which occupy it ; and thus to give a degree of freshness to the whole." But "if, in a dry season, the surface is found to be firm enough to bear the tread of cattle or horses, the latter operation may be done with a paring-plough ; if not, with a paring-spade, or breast-plough." And when, "after the surface has been thus cut over, and the state of dryness of the soil can be ascertained by its colour, any particular parts appear to be insufficiently freed from moisture, covered drains may generally be made, at a small expence, with the fibrous tufts which grow on the surface, (as with hard materials), and which will lie a length of time in the land, before they decay." And "the remainder of the roots and mould, pared off, require to be burnt, their ashes to be spread evenly over the surface, and to be immediately harrowed, or raked into the fresh mould ; to prevent their being displaced by the wind." When, "in this stage of the process, a fossil substance of almost any kind can be spread over the ashes, at a moderate expence, grafs-seeds may be immediately harrowed, or raked into this covering, and the surface be left to acquire a sward, without further trouble ; continuing to keep the young herbage closely pastured when the season will permit, first with sheep, and afterwards with heavier stock ; until the surface be rendered firm, and the soil be sufficiently bound together, with the fibrous roots

of herbage, to bear a succession of corn-crops ; if such should become advisable." It is added, that "an objection to this summary way of bringing the ground into the state of herbage, lies in there being no immediate gross return for the money expended in draining and cultivation. But to attempt to raise corn on a raw morass, or a black peat-moss, namely, on spongy vegetable mould, would only be increasing the expenditure, without any certainty of return. Let us, therefore, look for a productive and marketable crop, that may be raised with more certainty." It is noticed, that "in the south-west quarter of Scotland, potatoes have lately been raised, even in deep spongy peat-mosses, with good effect. The practice is to plant them in beds, divided by deep trenches ; more or less dung being used in their cultivation. Without this it is considered to be in vain to expect a crop." But, "to a certain extent, in a populous country, where dung and labour are plentiful (the whole being done by manual labour), this practice is very eligible, and does great credit to any person who struck it out. For after one or perhaps two crops of potatoes have been taken, a crop of oats is obtained. But every thing is still effected by manual labour. And, even with this, a very wet spring, or a cold moist summer, succeeded by early frosts, may frustrate the planter's hopes." Consequently, "what is most desirable, in this case, is a crop which is sown and reaped in the summer months ; and which requires neither labour nor attendance during the moist seasons of autumn, winter and spring. And fortunately, such a crop is, he observes, natural, or has been long inured to the climate of this island ; and is, moreover, one of the most profitable crops in English agriculture. This crop is rape-seed ; which is not only sown, but reaped in the very height of summer. And a soil, in which it is known to delight, is that of reclaimed watery lands, in a state of herbage." It is added that he "had not, however, known it to be raised on crude moory ground, as a first crop after draining, until he tried it a few years ago, in the south of Scotland ; where a considerable extent of ground of this nature had been drained, levelled, pared and burnt, and the ashes ploughed under by a young improver, without a proper plan for carrying on the improvement. He directed part of it to be sown with rape-seed ; though the season of sowing was then getting too late ; namely, the latter end of July, or the beginning of August." And that "the result, notwithstanding this and another unfavourable circumstance which it was too late to avoid (the land having been laid much too flat for a winter crop), was such as to prove, sufficiently, that rape-seed may be raised with profit, as a first crop, on drained moory soil. And it is highly probable, that many extensive tracts of lands, which now lie entirely waste, and as nuisances in their neighbourhoods, may through its means be improved, with immense profit to their proprietors. The experiment may be tried at a small expence. The cost of the labour and seed required, for a sufficient trial-ground, is inconsiderable. The proof is not whether rape will thrive as herbage, but whether it will mature its seed, on the given soil, in the given situation. Having received a recompence for the previous expences, in one or more rape-crops (for there is no danger, *in this case*, of exhausting the soil, of impoverishing ten feet deep, perhaps, of vegetable mould), it remains to lay the foundation of more permanent profits." And, "this may be done, in his opinion, by sowing grafs-seeds, either with, or over, the rape-crop, or after the stalks have been drawn, as seasons and circumstances may require ; continuing to stock the ground, in the manner already recommended, until the surface be sufficiently



# MOORY LAND.

sufficiently firm, and the soil has acquired a proper texture for mixed cultivation: a period which may be shortened by fossil substances, especially such as are calcareous, spread over the surface during any stage of the improvement of this sort of land."

And it is concluded, "that there are situations in which low-lying flat lands, such as are now under consideration, ought not, when they are brought to a productive state of herbage,—to meadow or rich pasture ground,—to be hastily changed from so profitable a condition; whether they be viewed in a private or public light."

There are other purposes to which moor lands may be applied with profit. Besides the advantages of shelter, great improvement and benefit may be derived from planting most of the more mountainous and poorer kinds with trees of the timber and other kinds. This is the case with large ranges of moory ground, in Yorkshire, Lancashire, and many other counties in the kingdom. And it is stated in the Perthshire Report, that "there is a great tract of moor or waste land, unfit for any useful purpose, except planting, betwixt Auchterarder and Tullybardin, (in Scotland,) and westward to the military road or farther. A few half-starved sheep may be seen in some places on its skirts, but the great body of the moor in its present state is useful neither to man nor beast. A small plantation of Scotch firs has grown several years in one place of this moor to a considerable size; and many other spots are planted by different proprietors, which are generally in a thriving condition, and shew that it is a proper soil for firs. As the moor is already divided, if the co-terminous heritors would put in permanent landmarks on their respective limits, and be at the joint expence of a bounding fence round the whole, each paying in proportion to the number of acres of his property inclosed, this great plantation would raise such a forest, as would shelter the bleak country round it, and be productive of a vast return. And although pine woods are not esteemed beautiful objects, yet they certainly are as pleasant to the eye, as gloomy heath." It is added, that "at present every acre of heath is at an average scarcely worth a sixpence of rent; but let it be called one shilling, which is more than the value. If it were planted, we may reasonably suppose, every tree grown to timber would in 80 years be at least worth 5s. There are firs in this part of the country, planted between 65 and 70 years ago, which are selling at present from 10s. to 15s.; and some of them bring 20s: but allow 80 years for any difference which may be in soil or climate, and take only one-half of the lowest price. Suppose what might be planted of the moor in question to be seven miles long and three miles broad, at an average. If the inclosure were a regular figure, having seven miles on two sides, and three on the other two, the bounding fence would be 20 miles long; but on the supposition that the figure be somewhat irregular, having exterior and interior angles, let the fence be called 30 miles in length, which is a large allowance. The area of this moor, seven miles by three, is 21 square miles, which are nearly equal to 10,700 acres. Every acre will plant 3422 trees, allowing sixteen square feet to each. At an early period, which depends on the strength of the soil, and the progress of the young trees, one-third should be taken out when they begin to interfere; and each of the remaining trees will occupy 24 square feet. At a second weeding, when it appears necessary, another third of the original number may be cut down; and those that remain being 1140, which are left to grow to timber, will each of them occupy a space of 48 square feet; which is sufficient for any ordinary fir. Many large firs grow vigorously in less room."

It is called the moor of Orchill, and the following is a calculation of the expence and profit of covering it with trees:

## Expences and Profit.

### Plantation, Dr.

	£	s.	d.
To rent of 10,000 acres, at 1s. for 80 years, at five per cent. compound interest	519,607	13	10½
An earthen fence of 30 miles, six feet high, at 4d. per yard, with compound interest for 80 years, at 5 per cent.	43,614	1	6
36,615,400 fir plants, at 1s. 6d. the 1000 of three years old, with compound interest at 5 per cent.	136,103	8	0
Planting ditto, done by six men to an acre, at 1s. 3d. each per day, with compound interest, at 5 per cent. for 80 years	198,865	6	8
Two foresters, at 20l. each of yearly wages, for keeping the fence in repair, weeding, &c. with ditto interest, at 5 per cent. for 80 years	38,849	3	3½
	937,039	13	4½

### Plantation, Contra Cr.

By 12,205,133 trees, 80 years old, being one-third of the number planted, and valued at 5s. each	3,051,283	5	0
Ditto number of weedings, taken out before 20 years, and valued at one halfpenny each, with compound interest for 60 years, amounting to	474,955	12	0
Ditto number of weedings, taken out before 30 years, valued at one penny each, for 50 years, at 5 per cent. compound interest	583,163	5	4½
Balance in favour of planting	3,172,343	9	0

And it is further stated, that "after allowing the value of the weedings to go for back-gone trees, and other contingent expences, not adverted to, which is surely enough, the profit is beyond conception. And were this plan to be adopted by the proprietors of this or other large moors, larches might be planted in some places, especially along the boundaries of different properties; and wherever the soil or the bleakness of the exposure is thought unfriendly, larches might thrive better than common firs, being the hardiest and the most valuable plants of the two. If there happens to be rivulets, ash would thrive on their banks, and elms, oaks, or beeches on any dry spots of green ground. This variety would remove the dull sameness of the plantation and enliven the prospect. Eight or ten rows of spruces, as having of all trees the best shelter, by continuing to any age, feathered to the ground, might be planted next the fence, to defend the whole plantation from sudden gulls or streams of wind. The expence on the plants might be, in a great measure, saved, and the trees rendered more congenial to the climate, by having the seed sowed in the country.

It is added, that "the prime cost of the fir-plants would be 2746l. 3s. which might in a great measure be saved; and of planting 4012l. 10s. of which one-fourth may be saved.



saved. After the first 15 or 20 years, the foresters will pay themselves out of the sale of weedings; and their wages may be saved entirely after the last weeding at 30 years." And it is suggested, that "whoever has beheld the astonishing plantations at Cullen-house in the county of Bamff, and at Monymusk in Aberdeenshire, by the late proprietors of these places, and also by heritors in different parts of the kingdom, who had a taste for improvement and understood their interest, will see the propriety of turning such moors as this to account. It is not a mere experiment, it is not without precedent, it is no chimera. They have many patterns before their eyes."

And with the view of shewing the expence of this system of improvement on a small scale, it is stated, that "one acre of land at one shilling of yearly rent, by compound interest at five *per cent.* for the space of 80 years, is worth 48*l.* 10*s.* 11½*d.* The same acre planted with common firs, and weeded down by various thinnings to 1140, and sold at the end of 80 years for five shillings each, would amount to 285*l.* And if more valuable timber were planted, it would fetch more. Whenever the land will not let at more than one shilling, or one shilling and sixpence the acre, and is unfriendly to cultivation by the plough, it is by far the best method of turning it to account, to plant it full of trees suited to its nature. Even common firs, in this way, will bring a sum equal to six shillings an acre of yearly rent; and moreover, it is of no small consideration, that the most barren and bleak moor, by this management, will be rendered perfectly green; and if depastured by sheep, when the trees are cut down, it will remain green, and continue to let at a decent rent." It is farther noticed, that "were gentlemen of fortune to allot a small sum annually, perhaps from 10*l.* to 50*l.*, according to their income, for raising plantations on different parts of their estates, the advantage to their heirs and to the public would be incalculable in every point of view. Nor does the writer see any solid objection against it. It is in vain to reason with those who will do nothing for posterity, because posterity has done nothing for them; as Swift expresses the argument of the slothfully selfish. The most plausible objection to this reasoning is, "that if all the low moors and other places not of the value of one shilling an acre yearly, and unfavourable to tillage, were planted, the country would be so much overstocked with timber, that it would give no price." This objection might be got rid of by answering, that so long as the value of an acre in planting was superior to one shilling of yearly rent, even the desire of *profit* ought to recommend planting; nor ought a generous man to regret, that the public were served in timber at a more moderate price.—But this subject claims attention; and the following considerations are submitted to the reader:—if the premises in the objection do not exist, the conclusion, being only hypothetical, must fall to the ground. There is little hope, that all proprietors will plant their moors in one generation, and, therefore, little danger that the country will be overstocked with timber. Their views, their taste, their mode of expenditure, and many of their other habits are so extremely various, that there is no period, in which all or even a considerable number of them will adopt this mode of improvement. And it is added, that "the fir-woods on the shores of the Baltic are decreasing so fast, by the continual and growing demand upon them, that they have retired far to the inland parts of these countries; and the necessary land carriage, together with the freight, insurance, and duty, has raised the price 50 *per cent.* within these few years; and if this goes on, it is difficult to say to what amount the expence of foreign timber may arise.

If the price become excessive, and that there be no supply of native fir, the improvement of the country, in the article of building, which is so ornamental to it, will become stationary; none being able to afford the expence of lodging themselves comfortably, except the affluent and great." And, "in countries at a distance from water carriage, where there is no pit-coal, and where the moorles are altogether or nearly exhausted, the inhabitants must feel the inconvenience of being in want of an article, which is so very necessary to their comfort, unless they have wood to burn. Some counties in England, and many parts of the continent, are in a deplorable condition in this respect. A supply of wood for fuel can never, in these circumstances, be plentiful, without extensive plantations on land, which is unfit for grafs or corn." It is also supposed, that "it is a presumptive proof that this country was warmer, and the temperature of the air more mild, than at present, when our very mountains produced grain. This mildness of the climate was, it is conceived, occasioned by nothing else than the woodiness of the country at that era. Restore, says he, the cause, and the effect will follow. The more wood there is in a country, in northern latitudes, the more temperate the climate, and the more genial the influence of the air. Add to this, that in point of beauty, there is no comparison between a bleak moor covered with stunted heath, and a waving forest clad with the livery of nature."

It is also stated, that "on the skirts of the moor of Orchill, there is a belt of sand, on which broom and furze are growing, particularly on the east, towards Auchterarder. The soil, in which furze is found, invites the industry of the husbandman, with an assured prospect of an immediate and abundant return. Where broom grows, the soil is lighter, and has for the most part a gravelly or sandy bottom. The former is a good mould, and fitted for most crops. The latter is well adapted for turnips and red clover; and after resting a few years, will bear plentiful crops of grain; but having a weaker body than the former, it requires to be tenderly dealt with in cropping. Let not the husbandman be surpris'd to see these plants rise, even at the interval of 50 years or more, after they seemed to have been extirpated; the seeds of some plants remain long in the ground, without being deprived of the germ, or vegetative principle. Marle abounds in the country round this moor, and is well calculated to stimulate such soils. Nature has indeed provided, in most situations, some manure that will increase the fertility of the earth. Lime is now carried to that part of the country; and the numberless little rills, which descend from the moor in all directions after rain, would enrich the grafs in many places, as may be seen in every little hollow between the hills. All these act indeed as a stimulus alone, which is mostly the case with every species of calcareous earth, of which they are entirely composed: but when argillaceous earth can be had at hand, it adds to the quantity of soil, strengthens the stamina, binding together the loose particles of such land as this, and thereby enables it to stand more frequent tillage." It is further stated by the same writer, that "from behind Culrofs, all the way to Blairingone, there are several tracts of waste and barren moor. The earl of Dundonald has planted much in this district; but more ought to be planted. In the moor between Gask and Maderty, and all the way from Dollary on the west to the vicinity of Perth on the east, there are large tracts of stunted heath, that might be planted; and the stately plantations growing on some parts of this moor, ought to induce the proprietors of other parts to follow the example. There is ground fit only for being planted, between Invermay and Newton;



and on the verge of the bank east from Aberdalgie to the great road. In the two places last mentioned, trees of hard wood, which are more valuable than firs, would thrive and come to perfection."

And it is properly remarked, that, "in plantations of fir, where the soil is tolerably good, young trees of hard wood, especially oaks and elms, may be put in among the firs, which protect them, and do not much retard their growth by exhausting the soil: but care must be taken to cut down occasionally such of the fir trees as interfere with their tops, by first lopping off their branches, and then laying down the trunk; which practice may be continued until all the firs, thought necessary to be taken away, are felled. In this manner one may have the benefit of almost two plantations on the same ground at once; the young trees being well advanced before the older ones are taken out of their way. This practice is becoming more general every day. In other cases a belt of firs is planted round, to protect other trees in the middle of a plantation, without which precaution the interior trees, in certain situations, would be too much exposed: but this management is left to be depended on, unless the ground be level and the firs somewhat tall before the other trees are planted."

The writer also states, that, "on the higher parts of the Sheriff moor, near Dumblane, there are near seven thousand acres, calculated only for being planted. The lower parts of this moor are, in some places, cultivated; and the soil being deep, if it were drained, pared, and burnt, might be improved still farther up, on the west side of the moor. The higher parts being planted with trees, and the skirts being reclaimed by tillage and grafs, would be an ornament to a country which is naturally cold and bare." And it is here remarked, that "the vast fir woods already mentioned, which are growing naturally in Rannoch, besides others in Strathpey and elsewhere in the north of Scotland, are raised much farther above the level of the sea, than any of those places here recommended for plantations of fir. The plantations of lord Dundonald behind Culrois, and those on the Knock of Crieff, are thriving on a soil as poor. These instances, and the fine plantation lately cut down at Turleum, behind Drummond cattle, a higher spot than any of them, may open the eyes of men to see what might be done on the Sheriff moor, on that of Orchill, and in similar places, which at present are of very little value."

The writer concludes by suggesting, that, "besides the moors that have been mentioned, there are some other *low-lying* wastes, covered with a thin stratum of moss, on a bed of gravel, which produce nothing but heath; one at Comrie, one at Dunira, one at Doune, one near Callander, and in other places. Mr. Drummond of Comrie, who lately purchased Dalganrofs, has boldly lined off streets and a marketplace through the very heart of the moor, fenced out part of the ground, and the new settlers are going on with spirit, to lay on new soil, and otherways to improve one of the most barren spots in the country; and men will be enabled to live where, a few years ago, scarcely a sparrow could find subsistence. Such are the effects of industry under the direction of good sense!"

Further, "the moor in the vicinity of the house of Dunira has been reclaimed some years ago. Mr. Dundas has planted the most barren spots, with a variety of trees suited to the soil; and, wherever there was any depth of earth, the expense of cultivation has been rewarded by extensive and rich fields of grafs. The plantations on the flat below will soon vie with the waving oak woods on the declivity of the winding hills and in the face of rocks, with which this singular place is surrounded." And also, "in the valleys of the

VOL. XXIV.

Seedlaw hills there are several spots of short heath, which are planted; but there are others of a better quality, which ought to be top-dressed with lime or marle, to raise a sward of grafs. This climate in general is too unfavourable for raising much grain; but potatoes and turnips, succeeded by a crop of barley and grafs seeds, might grow in many places, which, at present, are totally neglected."

The different facts of this kind which have been stated, are sufficient to shew the vast advantage that may be derived from this sort of improvement in many sorts of moory lands; and others may be seen in the excellent report from which these have been taken, as well as that of Invernesshire. Great improvements of this nature are likewise about to be undertaken by different spirited individuals in Lancashire. See *WASTE Lands*.

*MOORY Soil*, such a soil as is chiefly constituted of earthy matters of the moory kind. This sort of soil occupies large tracts in some districts, as has been sufficiently seen in the preceding article; which see, as also *SOIL*.

*MOORZAN*, in *Geography*, a town of Africa, in the kingdom of Bambarra; 75 miles N.E. of Segou.

*MOORZEELE*, a town of France, in the department of the Lys, and chief place of a canton, in the district of Courtray. The place contains 3650, and the canton 13,114 inhabitants, on a territory of 72½ kilometres, in 5 communes.

*MOOSE-DEER*, in *Zoology*, the *CERVUS Alces*, which see. The first mention we find of this remarkable animal, is in a tract of Mr. Josselyn's, entitled "New England Rarities." That author says, it is a very fine creature, growing to twelve feet high; the horns are extremely beautiful, with broad palms, some of those full grown being two fathom from the tip of one horn to the tip of the other. The same author, in another work, entitled "Two Voyages to New England," calls this creature a monster of superfluity; and says, that when full grown, it is many times larger than an ox. What Neal says of this animal seems copied from Josselyn. But the best account we have of it, is from Mr. Paul Dudley. This gentleman says, that they are of two kinds: the common light-grey moose-deer, called by the Indians *wampoose*, and the larger black moose. The grey moose is the same animal which Mr. Clayton, in his account of the Virginian quadrupeds, published in the Philosophical Transactions, calls the elk; and this is the creature described in the Anatomical Discoveries of the Paris Academy, under the name of the stag of Canada. Horns of this creature have been sent from Virginia, and called elks' horns: they are wholly the same with those of our red deer, except in size; weighing about twelve pounds, and measuring from the burr to the tip about six feet long. Phil. Trans. N<sup>o</sup> 444. p. 386. Abr. vol. vii. p. 447.

Mr. Dudley says, that the grey moose is like the English deer; and that these creatures herd together thirty or more in a company. The black or large moose has been taken, he says, measuring fourteen spans in height from the withers, which, allowing nine inches to the span, is ten feet and a half.

The stag or male of this kind has a palmed horn, not like that of our common or fallow deer, but the palm is much longer and more like to that of the German elk; but it differs from that in having a branched brow-antler between the burr and the palm, which the German elk hath not.

The large horns found fossil in Ireland, have, from their vast dimensions, been supposed to have originally belonged to the black moose-deer; but they, as likewise most other of the large horns found in this part of the world, must be referred to the elk kind, but of a species different from the

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European,



European, being provided with brow antlers, which that wants. Some of these horns are near twelve feet between tip and tip, and six feet four inches long; and may probably be ranked among those remains which fossilists distinguish by the title of diluvian. The largest horns of the American moose ever brought over are only thirty two inches long, and thirty-four between tip and tip.

Mr. Ray mentions, in his Synopsis of Animals, a pair of extremely large fossil horns, which he saw in a museum in Suffex; but he mentions no brow-antlers in these, and therefore probably they, as well as some others preserved in museums, were the horns of the German elk. See CERVUS *Alces*.

**MOOSE Hillock**, in *Geography*, the highest of the chain of mountains in New Hampshire, the White mountains excepted. It takes its name from its having formerly been a remarkable range for moose, and lies 70 miles W. of the White mountains.

**MOOSE Island**, a small island on the coast of Maine in America, at the mouth of Schoodic river, containing about 30 families. At the S. end of this island is an excellent harbour, fit for the construction of dry docks.

**MOOSE**, or *Mooshead Lake*, an irregularly-shaped pond of water in Lincoln county and state of Maine, that gives rise to the eastern branch of the Kennebeck river, which unites with the other, above Norridgewock, about 20 miles S. of the lake. It is said to be three times as large as lake George: on the N. and W. of the lake are very high mountains.

**MOOSE River**, a river of America that rises in Missinabe lake, and after pursuing a north-eastern course, and receiving, about 12 miles from its mouth, a southern branch, discharges itself into the southern part of James's bay, North America, by the same mouth with Abbitbee river. Moose fort and factory are situated at the mouth of this river, N. lat.  $51^{\circ} 16'$ . W. long.  $81^{\circ} 51'$ ; and Brunswick house is on its W. bank, about lat.  $50^{\circ} 30'$ . Beyond Brunswick house is a fall of 50 feet, above which the river is deep and navigable to a considerable distance; the soil and the climate above the fall being very good.—Also, a short stream in Grafton county, New Hampshire, running north-easterly from the White mountains into Amarefcoggin river.

**MOOSERAI**, a town of Hindoostan, in Bahar; 5 miles N.W. of Bahar.

**MOOSHEDA**, a small circar of Bengal, bounded on the N. by Dinagepour, on the E. by Janguirpour, on the S. by Bettooria, and on the W. by Poottole.

**MOOSSEE**, or **MOOSSEDOO**, a town of Africa, and capital of Gotto; 110 miles S.W. of Tombuctoo. N. lat.  $15^{\circ} 8'$ . E. long.  $0^{\circ} 16'$ .

**MOOT**, a town of Hindoostan, in the circar of Gohud; 18 miles S.W. of Kooch.

**Moor**, *El*, a town of Nubia; 35 miles S. of Chiggæ.

**MOOT-Hills**, in *British Antiquities*, denote hills of meeting, on which our British ancestors held their great courts. Many of these still exist not only in the British dominions, but also in the Netherlands. They commonly consist of a central eminence, on which sat the judge and his assistants; beneath was an elevated platform for the parties, their friends, and "compurgators," who sometimes amounted to 100 or more, and this platform was surrounded with a trench to secure it from the access of the mere spectators.

**MOOT**, formed either from the Saxon *metan*, *gemetan*, *meeting*; or from the French *mot*, *word*, in *Law*, a difficult case or question, argued by the students of inns of court, by way of exercise.

**MOOTACHILLY**, in *Geography*, a town of Hindoostan, in the Carnatic; 28 miles W. of Terriore.

**MOOTAGARA**, a town of Hindoostan, in Golconda; 45 miles S.E. of Hydrabad.

**MOOTAGOOD**, a town of Hindoostan, in Golconda; 5 miles W.N.W. of Combamet.

**MOOTA-GONGA**, a river of Hindoostan, which runs into the Gonga, or Bain Gonga; 40 miles S. of Bundowrah, in Berar.

**MOOTAL**, a town of Hindoostan, in the circar of Cuddapa; 34 miles N. of Gandicotta.

**MOOTAN**, a town of Hindoostan, in the circar of Hindia; 10 miles S.W. of Hufflinganbad.

**MOOTAPADDY**, a town of Hindoostan, in Madura; 10 miles E. of Nattam.

**MOOTAPILLY**, or **MEDIPILLI**, a town of Hindoostan, in the circar of Guntoor, on the coast of Coromandel, at the mouth of a river, which runs into the bay of Bengal; 75 miles S.W. of Mafulipatam. N. lat.  $15^{\circ} 35'$ . E. long.  $80^{\circ} 10'$ .

**MOOTER**, in the *Dock-Yards*, the person who forms and smooths the tree-nails for use.

**MOOTING**, in *Law*, the chief exercise formerly performed by students in the inns of court; being the arguing of cases, which young utter barristers practised at appointed times, the better to enable them to undertake the defence of their clients' causes.

Such as, from their learning and standing, were called by the benchers to argue *moot-cases*, were sometimes called *utter barristers*; the rest who, for want of experience, &c. were not admitted, were by some called *inner barristers*. The place where the moot-cases were argued, was anciently called a *moot-hall*.

In the inns of court there was a *bailliff* or *surveyor of the moots*, yearly chosen by the bench to appoint the moot-men for the inns of chancery, and to keep account of performance of exercises, both there and in the house.

**MOOTING**, the making a tree-nail exactly cylindrical to a given size, called the *moot*.

**MOOTINGY**, in *Geography*, a town of Hindoostan, in the circar of Guntoor; 18 miles E. of Guntoor.

**MOOT-MEN**, in *Law*, were those who argued *moot-cases*.

Out of these moot-men were chosen readers for the inns of chancery: where, in term-time, and in vacations, they argued cases in the presence of attorneys and clerks.

**MOP**, in some counties in England, is the term for what is called the statute in other places; being the time that young persons who intend themselves for servants, meet at some certain place, in order to be hired into services.

**MOPAR**, in *Geography*, a town of Hindoostan, in the Carnatic; 40 miles S.S.W. of Ongole.

**MOPEHA**, a low uninhabited island in the Pacific ocean, near Otaheite, and W. of Mouroua. See *Howe's Island*.

**MOPENDA**, a province of the kingdom of Anziko.

**MOQUEGNA**, a town of Peru, in the diocese of Arequipa; 70 miles S. of Arequipa. N. lat.  $17^{\circ} 20'$ . W. long.  $70^{\circ} 56'$ .

**MOQUILEA**, in *Botany*, apparently a barbarous name, of which no explanation is given. Aubl. Guian. v. 1. 521. Juss. 341. Lamarck Illustr. t. 427.—Class and order, *Icosandria Monogynia*. Nat. Ord. *Pomaceæ*, Linn. *Rosaceæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, turbinate, internally villous, with five roundish, acute, marginal segments.



ments. *Cor.* Petals five, roundish, inserted between the segments of the calyx. *Stam.* Filaments numerous (about 40), inserted into the calyx, capillary, longer than the corolla; anthers roundish, incumbent. *Pist.* Germen roundish, hairy, in the bottom of the calyx; style lateral, from the base of the germen, ascending, as long as the stamens, hairy in its lower half; stigma obtuse. *Peric.* and *Seeds* unknown.

*Eff. Ch.* Calyx five-cleft, inferior. Petals five. Style from the base of the germen. *Drupa*?

1. *M. guianensis*. Aubl. t. 208.—A tree, found by Aublet in the forests of Guiana, flowering in May. The trunk rises to the height of 30 feet, with a thick reddish bark. The wood is white, not compact. Leaves alternate, four to seven inches long, and two or three broad, elliptical, pointed, entire, smooth, and shining, with one rib and several transverse veins. Footstalks short and thick. Flowers white, in axillary and terminal clusters, whose stalks are triangular. Aublet saw nothing of the fruit, nor of the advanced germen, but analogy leads us to presume it a single-seeded *drupa*. No mention is made of any particular uses or qualities of this tree, which the above author calls in French *Moquillier*; perhaps a translation of the generic name.

MOQUIS, or MOQUINOS, in *Geography*, a savage tribe, who inhabit the centre of the Mother chain of mountains, in the part of America bordering on New Mexico. They were formerly converted by the Franciscans: but they have since killed all the missionaries and abjured the Christian faith.

MOR, a town of Arabia, in Yemen; 11 miles E. of Lohheia.—Also, a town of Arabia, in Hedsjas; 32 miles N.W. of Hagiaz.—Also, an island of Denmark, in the gulf of Lymfjord, sixteen miles long and six wide; containing a town and several villages.

MORA, a town of Portugal, in the province of Alentejo; 22 miles N.W. of Evora.—Also, a town of Spain, in New Castile; 16 miles S.E. of Toledo.—Also, a town of Spain, in the province of Catalonia, on the Ebro; 18 miles N. of Tortosa.—Also, a town of Sweden, in the province of Dalecarlia; 55 miles N.W. of Falan.

MORABAD, a town of Hindoostan, in Agimere; 10 miles S. of Roopnagar.

MORABEL, a town of the island of Ceylon; 28 miles N. of Trincomaly.

MORABIN, JAMES, in *Biography*, a man of letters, and secretary to the lieutenant-general of the police in Paris, was a native of La Flèche, and died in 1762. He published "A Translation of Cicero's Treatise on Laws," and of the dialogue on orators generally attributed to Tacitus: "Histoire de l'Exil de Cicéron," which has been translated into English: "Histoire de Cicéron," 2 vols. 4to. 1745. This work appeared nearly at the same time with that of our own countryman Dr. Middleton on the same subject, and shared with it in reputation: "Nomenclator Ciceronianus," and "A Translation of Boetius de Consolatione."

MORACA, in *Geography*, a river of Albania, which runs into the lake of Scutari; 10 miles N. of Antivari.

MORAD DAGHI, a mountain of Asiatic Turkey, in the province of Natolia; 30 miles S.W. of Kiutaja.

MORAD Siâi, one of the branches of the Euphrates, that rises 20 miles E. of Diadin, and joins the other branch 45 miles S. of Arzingan.

MORADGUNGE, a town of Hindoostan, in Oude; 13 miles S. of Azimgur.—Also, a town of Hindoostan, in Allahabad; 30 miles N.N.W. of Allahabad.

MORÆA, in *Botany*, a name given by Miller, from

whose Dictionary, ed. 8, Linnæus adopted it in the sixth edition of his *Genera Plantarum*, in honour of Robert More, esq. of Shrewsbury, said, by the author first mentioned, to have been "well skilled in the science of botany, and also in other parts of natural history." This is all we ever heard of his claims to the above distinction. Thunberg presumed *Moræa* was designed to commemorate Dr. Moræus, the father-in-law of Linnæus, who wrote on the *Aconitum Napellus*, for whose sake perhaps Linnæus the more readily admitted this name. For the same reason we may willingly retain it, in case the pretensions of Miller's friend should be deemed equivocal.—Linn. Gen. 27. Schreb. 36. Willd. Sp. Pl. v. 1. 240. Mart. Mill. Dict. v. 3. Ker (Gawler) in Sims and Kon. Ann. of Bot. v. 1. 238. Ait. Hort. Kew. ed. 2. v. 1. 110. Juss. 58. Lamarck Illustr. t. 31. Gærtn. t. 13. Thunb. Diff. 6. (Vieusseuxia; De la Roche Diff. 14. Redout. Lil. v. 1. 42.)—Class and order, *Triandria Monogynia*, or rather *Monadelphina Triandria*. Nat. Ord. *Ensatæ*, Linn. *Irides*, Juss.

*Gen. Ch.* *Cal.* Spatha of two valves, involute, permanent. *Cor.* regular, of six petals, spreading, the three alternate ones considerably smaller, sometimes ascending. *Stam.* Filaments three, awl-shaped, more or less united, above the base of the petals into a tube, erect; anthers vertical, erect, oblong, cloven at the base. *Pist.* Germen inferior, oblong, more or less cylindrical; style cylindrical, short; stigmas three, spreading each with a petal-like, oblong, somewhat dilated, cloven appendage, pressed against each stamen. *Peric.* Capsule oblong, angular, of three cells and three valves. *Seeds* numerous, orbicular, depressed.

*Eff. Ch.* Corolla regular, of six petals, superior; the three alternate ones much smaller. Stigmas erect, with a petal-like appendage. Stamens united. Capsule with many seeds.

We have already, under the article *IRIS*, adverted to the difficulty of distinguishing that genus from *Moræa*. They agree in their petal-like stigmas, except that in *Moræa* these, as well as the stamens, are more erect. *Moræa* appears to us distinct in having six separate petals, without a tube, and the stamens united above the base of those petals, into more or less of a tube. The *Vieusseuxia* of some authors is separated by them from *Moræa*, because the stamens are united more completely; but there are so many gradations in the degree of union, that we cannot think the distinction just. Several plants have been referred to *Moræa* by Mr. Ker, and by the late Mr. Dryander in Hort. Kew. which, though we dissent unwillingly from such authorities, we cannot but remove to *Sisyrinchium*, because of their nearly equal, and all alike spreading, petals, and narrow stigmas; their stamens also being perfectly monadelphous. These are *Moræa virgata*; Jacq. Ic. Rar. t. 228. *M. elegans*; Jacq. Hort. Schoenbr. v. 1. t. 12. *M. flexuosa*; Curt. Mag. t. 695. *M. collina*; Jacq. Ic. Rar. t. 226.

Willdenow has seventeen species of *Moræa*; Thunberg, in his Dissertation on the genus, published in 1787, has twenty-one; but several of each do not correspond with the above characters. Mr. Ker enumerates twenty-six in the Annals of Botany, and there are eighteen in the new edition of Hort. Kew. Linnæus mentions but two in his *Sp. Pl.* but there are twelve in the 14th edition of *Syst. Veg.* chiefly derived from the *Supplementum*, being mostly borrowed from Thunberg.

Examples of *Moræa* are

*M. iridioides*. Sword-leaved *Moræa*. Linn. Mant. 28. Ait. n. 18. Curt. Mag. t. 693. Redout. Liliac. t. 45.—Leaves equitant, sword-shaped, perennial. All the petals spreading, nearly of equal length; the alternate ones much narrower.



narrower. Native of the Cape of Good Hope. Miller cultivated it in 1758, and figured it in his *Icones*, t. 239. f. 1. This is the *Iris compressa* of Thunberg, Linn. Suppl. and Willd. Sp. Pl. v. 1. 230, as Mr. Ker justly observes, and as we find by a specimen from Thunberg. The habit is more like an *Iris* than most of the present genus. *Root* fibrous, perennial, tufted. *Stem* twelve or eighteen inches high, ascending, compressed, smooth, often bent, but slightly leafy. *Leaves* numerous, chiefly radical, as tall as the stem, sword-shaped, dark green. *Flower-stalks* clothed with several close cylindrical sheaths. *Corolla* white, two inches broad, the three larger petals marked at the base with a yellow oblong spot. *Filaments* generally quite distinct.

*M. pavonia*. Peacock Moræa. Ait. n. 3. Curt. Mag. t. 1247. (*Iris pavonia*; Linn. Suppl. 98. Willd. Sp. Pl. v. 1. 238. Jacq. Hort. Schoenbr. t. 10. Andr. Repof. t. 364.)—Smaller petals with an awl-shaped incurved point; larger nearly orbicular; all dotted at the base. Stem mostly simple, hairy as well as the leaves.—Native of the Cape. Introduced by Grimwood and Co. into England about the year 1790. *Ait.*—The *leaves* are long, very narrow, striated and hairy, as indeed is the whole of the herbage. *Flower* of a deep rich orange, the petals all dotted towards the base; the larger ones marked with a green and purple eye-like spot, of great beauty. The *filaments* are united almost all the way up, so that this species is by De-candolle referred to *Vicissœuxia*.

*M. tripetala*. Three-petal-like Moræa. Ait. n. 4. Curt. Mag. t. 702. (*Iris tripetala*; Linn. Suppl. 97. Jacq. Ic. Rar. t. 221.)—Three alternate petals minute, linear, sometimes wanting. Procured from the Cape in 1802, by E. Woodford, esq.—A delicate, slender, smooth species, much resembling an *Iris* of the bulbous tribe, in the position of its *stigmas*, and long linear claws of the larger *petals*, but distinguished from that genus by monadelphous *stamens*, and the entire want of a tube to the *corolla*. From the rest of its own genus it differs in having very small, linear, slightly recurved inner, or alternate, *petals*, which are often altogether wanting. The colour is pale blue, purplish, or pink, with a yellowish dark-edged eye on the three large *petals*.

*M. edulis*. Esculent-rooted Moræa. Ait. n. 8. Curt. Mag. 613, 1238. (*M. vegeta*; Jacq. Ic. Rar. t. 224, but not of Linnæus. *M. fugax*; Jacq. Hort. Vind. v. 3. t. 20. *Iris edulis*; Linn. Suppl. 98. *I. longifolia*; Schneev. Ic. t. 20. Andr. Repof. t. 45.)—Lower leaf extremely long. Petals all widely spreading; the alternate ones oblong, about half the size of the others. *Filaments* distinct.—Very common and abundant in various places at the Cape of Good Hope. Thunb. Diff. 31. The *bulbs* are eaten, chiefly by the Hottentots. The one or two radial *leaves* are twice or thrice the height of the *stem*, which bears two or three very pretty *flowers*, usually purplish, with a yellow eye on each larger petal, but sometimes the whole flower is pale yellow, with a few darker specks.

Some species, with a long tube to the *corolla*, appear to us improperly referred to this genus, as belonging, on that account, to *Iris*. Such are *M. longiflora*, Ker. in Curt. Mag. t. 712. Ait. n. 9, a dwarf species with golden flowers; and *M. Sisyrrinchium*, Ker in Ann. of Bot. v. 1. 241. Ait. n. 15. (*Iris Sisyrrinchium*; Linn. Sp. Pl. 59. Sm. Fl. Græc. Sibth. v. 1. 30. t. 42. Redout. Liliac. t. 29. *Sisyrrinchium majus et minus*; Ger. em. 103.)—This last is a native of various parts of the south of Europe. Its *bulbs* are said to be eatable. The *stamens* seem united to the *style*, rather than to the *corolla*, in Mr. Bauer's drawing in Fl. Græc; but Ventenat describes them as connected with the *corolla*, and sepa-

rate from each other, which is as they ought to be in an *Iris*. We have never seen a fresh specimen.

MORÆA, in *Gardening*, affords plants of the bulbous-tuberous-rooted herbaceous flowering perennial kinds, of which the species cultivated are the iris-petalled moræa (*M. irio-petala*); and the iris-liked sword-shaped moræa (*M. iri-dioides*.)

*Method of Culture*.—These plants are all capable of being increased either by seeds, offsets, or parting the roots, which should be performed in August, in all the methods; the seeds being sown in small pots, and plunged into a bed of old tanners' bark under a common frame. It is chiefly sown for the sake of raising new varieties.

It should be noticed likewise that the plants require the shelter of a frame in winter, being apt to draw up weak when placed in the dry stove. Where they can enjoy the free air in winter, when the weather is mild, and be secured from frost and hard rain, they flower and ripen their seeds better than with more tender management. In summer they should be fully exposed to the open air till the approach of autumn, when they should be removed into the shelter of the frame.

All of these afford variety among other potted plants in the greenhouse, and other collections.

MORAGATCHA, in *Geography*, a town of Bengal; 13 miles S. of Calcutta. N. lat. 22° 27'. E. long. 88° 18'.

MORAI is the name given at Otaheite, in the South Sea, to their burying grounds, which are also places of worship and sacrifice. This is a pile of stone raised pyramidi-cally upon an oblong base or square, two hundred and sixty-seven feet long, and eighty-seven wide. On each side is a flight of steps; those at the sides being broader than those at the ends; so that it terminated not in a square of the same figure with the base, but in a ridge, like the roof of a house. There were eleven of these steps to one of these morais, each of which was four feet high, so that the height of the pile was forty-four feet; each step was formed of one course of white coral stone, which was neatly squared and polished; the rest of the mass, for there was no hollow within, consisted of round pebbles, which, from the regularity of their figure, seemed to have been wrought. The foundation was of rock-stones, which were also squared. In the middle of the top stood an image of a bird, carved in wood, and near it lay the broken one of a fish, carved in stone. The whole of this pyramid made part of one side of a spacious area or square, 360 feet by 354, which was walled in with stone, and paved with flat stones in its whole extent. About a hundred yards to the west of this building was another paved area or court, in which were several small stages raised on wooden pillars, about seven feet high, which are called by the Indians *ewaitas*, or *whattas*, and seem to be a kind of altars, as upon these are placed provisions of all kinds, as offerings to their gods. On some of them were seen whole hogs, and on others the skulls of above fifty, besides the skulls of many dogs, and of human sacrifices, which are taken up after they have been several months under ground. The principal object of ambition among the natives is to have a magnificent morai. The male deities, for they have them of both sexes, are worshipped by the men; and the female by the women; and each have morais to which the other sex is not admitted, though they have also morais common to both. Hawkesworth's Voyages, vol. ii. p. 166—239. Cook's Third Voyage, vol. ii. p. 40, &c.

MO-RAISAH, in *Geography*, a sea-port of Africa, in the kingdom of Tunis, with a small harbour, in the bay



of Tunis, anciently called "Maxula;" 24 miles E.S.E. of Tunis.

**MORALS**, any thing relating to the manners or conduct of life.

Besides the theological virtues, as *faith, hope, charity*, &c. there are also moral virtues; as *justice, temperance*, &c.

**MORAL Actions**, or *Acts*, are such as render the agent *good*, or *evil*; and, consequently, rewardable, or punishable, because he does them. See **ACTION**.

**MORAL Cause**. See **CAUSE**.

**MORAL Certainty**, or *Affurance*, is used to signify a very strong probability; in contradistinction to a mathematical demonstration. See **CERTITUDE**.

**MORAL Education** is that branch of education which respects the moral or active principles of the mind, considered in distinction from the intellectual powers. By moral education we understand that series of means by which the affections and dispositions are cultivated, regulated, or restrained; and by which the moral sense or conscience is directed, enlightened, and invigorated.

Intellectual and moral education in various ways coincide with each other. There is, indeed, no doubt, that a very high degree of intellectual, is consistent with a low degree of moral culture; and, on the other hand, great excellence of character is often found, where there has been no opportunity for the higher exercises of the understanding. Nevertheless, the noblest heights of moral excellence can only be attained, where the intellectual principles receive a suitable cultivation. The memory is requisite, not merely to treasure up the stores of literature and science, but to preserve, for future use, and to recal, the dictates of moral wisdom, and the results of moral experience. The habit of observation is essentially necessary to trace out the effects of our conduct on the happiness of others. Without the habit of attention, the lessons of the moralist, in whatever form delivered, will have only a momentary influence on the heart. Without the power of calling off the mind from the external impressions, the higher and more refined motives would have little effect in regulating the conduct. If the imagination be neglected, so as to become incapable of carrying the mind out of the range of the objects of memory or actual sensation, benevolence will lose some of its most powerful stimuli, and the efficacy of religious functions will be materially impeded. Without a proper cultivation of the judgment and the reasoning powers, the decisions of moral sense will often fail in correctness; the consequences of actions will be incorrectly appreciated; the reasonings of the moral instructor will not be understood; and the mode of carrying into effect the purposes of wisdom and benevolence, will be frequently mistaken. To neglect the cultivation of the intellectual powers, from the idea that they are unnecessary to worth of character, would then be acting upon very erroneous principles. If the moral sense is fairly analysed, it will appear that it is in part founded upon the exercise of those powers; and that, in a great variety of instances, it implies their operation. As long as we give the judgment the supremacy among them, and cultivate the rest with a view to it, we need not fear lest we should injure the moral culture of the mind.

We are fully aware, (and it is a consideration which must delight every heart in which there is a spark of philanthropy,) that by the wise constitution of our nature, happiness is made to depend much more on a proper regulation of the affections and dispositions, than upon the cultivation and refinement of the intellectual powers; and that the former may attain a high state of purity and worth, without eminence in the latter: but we conceive also, that it cannot be

denied, that to make right affections extensively efficacious in promoting the good of mankind, considerable cultivation of the understanding is absolutely necessary; and with the same rectitude of heart, he will be the happier man, as well as the more useful member of society, whose mind has acquired the highest degree of correctness and comprehension. A well regulated understanding is a most important aid in tracing out the principles of morality, their mutual connections and dependencies, their extent and their consequences. He whose mind has been well trained and disciplined, will be best able to understand the evidence of important truths which do not lie within the reach of sense; he will best perceive their application, and how they are to be employed for the improvement of himself and others.—"The pleasures of imagination," says the great Hartley, "are the next remove above the sensible ones, and have, in their proper place and degree, a great efficacy in improving and perfecting our natures. They are to men, in the early part of their adult age, what playthings are to children; they teach them a love for regularity, exactness, truth, simplicity; they lead them to the knowledge of many important truths relating to themselves, the external world, and its author; they habituate to invent, and reason by analogy and induction; and when the social, moral, and religious affections begin to be generated in us, we may make a much greater progress towards the perfection of our natures, by having a due stock, and no more than a due stock, of knowledge, in natural and artificial things, of a relish for natural and artificial beauty."—Besides, the stores of science and literature in various ways contribute to promote the ends of benevolence, and they are often eminently subservient, even to the interests of religion. Among the objects of philosophical research, this is peculiarly the case with the various branches of natural history and philosophy, and all that respects the practical laws of the human mind; and we should be induced to follow up this idea a little at large, if we had not already said as much perhaps as is requisite for our present object, near the close of the article **INTELLECTUAL Education**.

The moral culture of the mind is, in like manner, of great importance, even with a view to its intellectual culture; and this in several ways. It is almost impossible for a person to be at all conversant in education, without perceiving how much the progress of the mind in the acquisition of knowledge, and still more in the development and improvement of its various faculties, depends upon the dispositions. The affections, when wisely directed and regulated, afford powerful motives to the due employment of those means by which the culture of the understanding is to be effected; and the ill-direction of the affections not only operates to the loss of those valuable excitements, but throws positive impediments in the way of improvement. Pride, perverseness, and obstinacy, the eager or indolent desire of self-gratification, all directly tend to impede the mental progress. Vanity, in youth, we are not disposed to regard with too suspicious an eye; for it is, then only the excess of qualities which are of eminent value; but pride commonly presents an effectual bar to improvement, so far as depends upon individual efforts. Perverseness and obstinacy, as long as they continue to have power, materially interfere with the cultivation of the judgment, and thwart the endeavours of those who would guide the mind in the paths of knowledge. And that desire of self-gratification, which, even at an early period, makes the difficulties of intellectual acquirements burdensome and disgusting, has often destroyed the vigour of body and mind, and blasted the fairest hopes of eminence. (See also **INTELLECTUAL Education**, columns 7, 13, 15, &c.) Again, truth is most easily discerned, especially in the extensive and

most



most important departments of moral science, where the understanding is not clouded with those prejudices which habitual candour would dispel; where a rational, not depressing, humility enables it to perceive its own deficiencies, and lead it to seek for farther light; where the love of truth is a ruling feature, and will not allow it to listen to the suggestions of indolence, but urges it to press forward whenever important truth is to be obtained, and keeps it from those departures from the straight forward road, which an unrestrained attachment to its own theories is constantly producing.—Thus, again, the means employed for the moral culture of the mind, will necessarily bring into exercise the intellectual powers. Among a large proportion of the community, these are the chief sources of intellectual culture; and, indeed, with the exception of those derived from the usual employments of life, we may justly say they are their only sources; and wherever they are judiciously employed, they cultivate the judgment and the reasoning powers; they increase the comprehension of the mind, exercise its attention and abstraction, and certainly go hand in hand with the best objects of literary and scientific pursuit, in their effects upon the understanding in general. We shall never be found among those who depreciate the importance of literature, or of physical science; but we have no doubt that the effects upon the intellect, of the well-directed pursuit of religious knowledge, (to leave out of view the higher departments of mental and moral science,) are not inferior to those of literary and scientific pursuits, in cultivating those mental habits and powers, which are of the greatest importance in the conduct of life, in promoting the happiness of the individual, and his benefit to others. The laborious classes of the Scotch afford a striking illustration of this truth. During a large portion of the time in which they have manifested the acuteness and penetration of thought, the solidity of judgment, and the habits of reflection for which they have been justly so much noted, these qualities have been chiefly brought into exercise by their religious culture. And we have no hesitation in saying, more generally, that the pursuit of religious and moral science, has been an eminent means of promoting the intellectual improvement of our species. The powers of the mind have had a most important exercise while engaged in it; and the activity, depth, and, frequently, accuracy of research which it has produced, have often, either directly or indirectly, been efficacious in extending the limits of human knowledge on other subjects. And we believe it to be a fact, which is abundantly well authorized by experience, that the well-directed pursuit of moral and religious truth, has the most happy effect in increasing the vigour and comprehension of the mind; and that numerous instances have occurred, in which such pursuits, under the guidance of good sense, and stimulated by right dispositions, have most materially cultivated accuracy of judgment and extension of views, and have produced a degree of sublimity of soul, which is altogether out of the reach of those who rest with secondary objects merely, however important these may be in themselves and in their connections. Once more, the moral culture of the mind aids the intellectual, by leading the mind, in its choice of objects of pursuit, to those which, while they are most beneficial to mankind, have, at the same time, the direct tendency to bring into exercise the powers most important to the right conduct of life. Some of the foregoing remarks more immediately relate to that stage of the mental progress, in which the work of self-education begins; but we believe they may lead the parental instructor to some useful conclusions; and we wish to add, that those whose names rank the very highest in the departments of physical and mental science, Bacon, Boyle, Newton, Locke, and Hart-

ley, were men whose minds were under strict moral regulation; and those who trace out its effects on their labours and pursuits, will probably agree with us in opinion, that they owed much of their comprehension of mind, discernment, and penetration, to their moral culture. “Some people have a notion,” says Miss Edgeworth, “that the understanding and the heart are not to be educated at the same time; but the very reverse of this is perhaps true: neither can be brought to any perfection, unless both are cultivated together.” *Pract. Ed.* ch. x.

Our readers will have perceived, that in moral, we include religious education. We are not aware how either those who acknowledge the divine authority of the gospel, and their consequent obligation to make its principles and precepts their rule of life, or those who have studied in the schools of religious philosophy, and discovered that religious principle and religious affections constitute an essential part of moral excellence, can hesitate in considering the cultivation of them as a part of their duty. We feel ourselves fully borne out by the soundest views of mental philosophy, as well as by the laws of Christianity, when we assert, that those principles of action which respect the Supreme Being, are, in themselves considered, of the highest obligation,—that they afford the most beneficial regulation to all the inferior principles of our nature,—that they give stability and refinement to those affections and dispositions which are themselves component parts of human duty,—and that, in proportion as they acquire their due extent and influence as primary motives, the moral character is improved and exalted. Regarding the cultivation, therefore, of the religious principle, as a most important branch of education, we should feel it a dereliction of duty, if, on this occasion, we did not lay before our readers our views as to the mode by which it is to be effected. In doing this, we are aware of the delicacy of our ground; and while we endeavour to bring forward those general principles of religion, in which we should suppose all agree who acknowledge with us the divine origin of Christianity, we shall scrupulously aim to steer clear of all those controverted points of doctrine which at present so much agitate the public mind. We solicit from those of our readers who may have been too much accustomed to separate religion from morality, to give our remarks a candid perusal; and perhaps for the cultivation of those dispositions which respect the social and private duties, we may be able to afford them some hints: but as our system of morality is Christian morality, we apprehend that they will perceive indications of our radical principle in almost every part of what we have to offer. We earnestly wish to lead parents, and others who are concerned in the early stages of education, to take as much pains to give the mind right biases, and to cultivate the rudiments of right affection, respecting religious duty, as to give habits favourable to the pursuit of literature and science, and to the exercise of the social and private virtues.

We shall be led to enter more at large into the justification of our views as we proceed; but we may take this opportunity of reverting a little to some remarks which we made in the 9th and 10th columns of *INTELLECTUAL Education*. In reference to the incomparable elementary works of Miss Edgeworth, we spoke of “their striking and much-to-be-lamented deficiency in every thing like religious principle;” and, with the same general view, we expressed our opinion, that her work on education is “essentially deficient.” With respect to the latter, we do not mean to say that the authors of *Practical Education* had not a full right to choose for themselves what objects of education they would attend to; and, as we have already intimated, we are fully aware of the extreme difficulty of writing on the subject of religious education,



education, so as to be satisfactory to all parties; but when they declined it altogether, it would surely have been desirable to state, that it was from no want of conviction of the supreme importance of religion, and the necessity and duty of early religious culture, but from the apparent impossibility of adapting their observations to the generality of those who might advantageously employ their remarks on moral culture. Prefixed to the second edition of *Practical Education*, we do indeed find some remarks in reference to M. Piçet's strictures on their silence respecting religion. "Children usually learn the religion of their parents; they attend public worship, and both at home and at school they read the bible and various religious books, which are of course put into their hands. Can any thing material be added to what has already been published on this subject? Could any particular system meet with general approbation?" But surely this refers solely to religious *instruction*. Respecting the best means and degrees of communicating religious knowledge, it is perhaps impossible to lay down any plan that will be generally acceptable or practicable: but the communication of religious knowledge is not the *most* essential part of religious *education*. The authors of *Practical Education* shew too intimate an acquaintance with the nature of the affections in general, to authorize the supposition that they can imagine religious affections can spring up in the mind without cultivation; or that religious principles can be formed, without the use of means analogous to those by which the disposition to obedience, the love of truth, and the social affections, are produced and cultivated in the heart. Where sound views of the nature of the mind prevail, the only point is, whether religious affections and principles constitute a part of our duty; if they do, there can be no question but that, to give them their due influence and stability among our principles of action, the cultivation of them must be begun early, before the mind is pre-occupied, before it is rivetted on the objects of sensation, or the subordinate pursuits of the imagination and self-interest. And we should have rejoiced if a work which displays so much soundness and strength of moral principle, and which affords such excellent instructions respecting the regulation of the temper, the formation of the habits of obedience and veracity, and the cultivation of the social affections, had also contained some directions that might have assisted parents, anxious to discharge their duty to their children to their full extent, in ascertaining how they were to produce, exercise, and regulate those other affections, which, when become habitual, and made the actuating motive of the conduct, contribute in so eminent a degree to the present and future happiness of the individual, and to his progress in every department of moral excellence. It would have been well if the authors had, for the benefit of others, registered the results of their own experience, relative to the manner of cultivating those religious *principles*, which, under all the varieties of Christian faith, cannot be regarded as otherwise than essential to the discharge of Christian duty. It might have disgusted some, who rate low the importance, or rather the necessity, of religious principle; and it might have furnished the bigot with the opportunity of finding out deficiencies in the authors' creed, because they had not taught the peculiarities of his own; but no judicious person of the first class would have been prevented from deriving from their more general observations, that information on education which their work is so eminently calculated to communicate; and as to the latter class, we believe they must be allowed to go on in their own way, for it is seldom practicable to enlighten the judgment, where religious bigotry gains an absolute sway. In these remarks

we are not without a view to our own justification, and that of other writers, who at present or in future may pursue the same track, if indeed justification is required for contributing a little towards the furtherance of the most important objects of education.

But it would be injustice to the authors of *Practical Education*, not to add, that at the close of the advertisement to their second edition, they state that they "continue to preserve the silence upon this subject which they before thought prudent; but they disavow, in explicit terms, the design of laying down a system of education, founded upon morality, exclusive of religion." And to the same purpose is a letter which we have recently received from Mr. Edgeworth, in which he enters somewhat more explicitly into the subject. After expressing himself in very favourable terms respecting our preceding article on education, and the manner in which *Practical Education* has been discussed in it, he adds, "I must, however, regret that an error pervades the whole, which has been adopted by most of our critics, and which we most earnestly deprecate,—the imputation of disregarding religion in education. In the French translation of *Practical Education*, this subject is discussed in the preface, and I beg from your justice, that some occasion may be taken of entering our protest against this charge. In a book written by Miss Edgeworth and me, called *Professional Education*, we hope that under the chapter 'clerical education,' we have evinced a proper sense of the clerical character, and an enlarged view of religious sanction. We wrote this chapter for the clergy of the establishment, to which we belong; but our views in *Practical Education* were not confined to any sect or nation. Our private tenets are of little consequence to the public; but we are convinced that religious obligation is indispensably necessary in the education of all descriptions of people, in every part of the world."—"We dread fanaticism and intolerance; while we wish to hold religion in a higher point of view than as a subject of exclusive possession, or of outward exhibition. To introduce the awful ideas of God's superintendence, upon puerile occasions, we decline. At the same time we have not presumed to blame others for acting upon a different persuasion.—I have the honour to be a member of the board of education in Ireland. My opinions on the subject of national education appear in our reports. By these I hope I shall obtain the justice due to me on this subject; and that it will appear that I consider religion, in the large sense of that word, to be the only certain bond of society." Mr. E. does not give us express permission to use his letter in the manner we have done; but it appears the surest way to avoid further error; and we confidently hope for his excuse, if we have gone beyond his intentions. Respecting the part of professional education to which Mr. Edgeworth refers, if our plan was less limited, we should offer some remarks; and we shall only add here, that the plans which the author would adopt, to infuse a devotional taste and religious principle into the mind of a boy designed for the clerical profession, must, so far as they are judicious and effectual, be alike important for children in general, whatever be their destinations in life. If there be any pursuits which are inconsistent with religion, children cannot, of course, be religiously educated for them; but in so far they must be inconsistent with duty. And if the opportunities for the cultivation of religious principle are greater in the clerical profession than in any other, and its moral dangers fewer, then there is the greater necessity that those who are designed for the more active pursuits and employments of life, should be early imbued with those principles which may be their safeguard, and which will never be so well



well cultivated by the individual himself, as when there has been a judicious foundation laid for them in early culture.

We must not omit also to mention, that we have been honoured with a letter equally flattering to us, from Miss Edgeworth, one leading object of which is to rectify an error into which we appear to have fallen, in speaking of her in connection with Practical Education, "as if it were entirely *her* work." We had not forgotten what is stated in the preface, that the chapters which more immediately refer to literary and scientific instruction were written by Mr. E.; that the sketch of the introduction to chemistry was written by Mr. Lovell E.; and that the chapter on obedience was written from the late Mrs. E.'s notes; but in *INTELLECTUAL Education* our concern was merely with the general principles of intellectual culture, and not with the application of them to the manner of teaching any particular object of intellectual pursuit. Now those parts of Practical Education to which we had occasion to refer, were written by her; and without depreciating the value of the other parts of the work, we have been so much accustomed to consider these as the subordinate departments, and the leading features of the work as her's, that we have perhaps expressed ourselves on this point with some degree of inaccuracy, which, however, we hope we have now sufficiently rectified. With that modesty and love of truth which her writings imply, Miss E. is still more anxious to reduce our appreciation of her own merit in the departments which Mr. E., in his preface, speaks of "as written by her." "This," she says, "is literally true; but he should have added, that the materials were received from what I saw and heard in the daily education of his family. The children mentioned in 'Practical Education,' my half brothers and sisters, were educated by my father, and by their own excellent mother, who devoted her whole time and thoughts to the subject. I was grown up at the time they were infants, and thus I had, during the whole course of their education, daily opportunities and leisure to observe its progress; and from seeing and hearing so much on education, I was better enabled, perhaps, to write upon this subject than upon any other." We can only say that if her advantages have been great, she has made an excellent improvement of them. In common with her writings in general, those on education clearly shew, that she possesses, in an eminent degree, the talent of bringing forwards the ample stores of accurate knowledge with which enlightened and comprehensive observation and experience have supplied her, in that time and manner which will give them their greatest practical utility.

There are several works on education, which, to parents who are anxious to fulfil their duties to their children, may supply, in a great measure, the deficiencies to which we have referred in Practical Education. Mrs. H. More's works, directly bearing on education, furnish some exceedingly important observations; mixed indeed with much which we cannot adopt or approve, but in themselves of sterling value. Miss Hamilton's first volume we have formerly spoken of as of eminent service in the cultivation of the affections. Her remarks are often deficient in closeness and precision; and in various parts they want that minuteness which is necessary to give them full force in their application; but we regard her work as the best calculated we know, to assist the religious mother in training up her children in the ways of wisdom. We should be unpardonable if we did not also refer our readers to Dr. Priestley's *Observations on Religious Education*, contained in his *Miscellaneous Observations relating to Education*, and also published separately. However variously that eminent character may be estimated by different

parties in religion and philosophy, they who have studied those parts of his works which directly bear upon religious philosophy, and the application of it to the conduct of life, cannot fail to assign him a high rank in the scale of utility; and in the work to which we have referred, he has shewn, with a strength and perspicuity of reasoning, which one would conceive no well regulated mind could resist, that *early* attention to the religious education of their children, is incumbent on all who wish that they should, in the progress of life, fulfil the duties of Christian morality. We may have farther occasion to refer to, or select from, that work. The following observations from the second section, tending to shew that religion is the first rational object of education, so completely and well express our own opinions of that point, that we make no apology for here introducing them to the notice of our readers.

"The general object of education is evidently to qualify men to appear to advantage in future life, which can only be done by communicating to them such *knowledge*, and leading them to form such *habits*, as will be most useful to them hereafter: and in this *the whole of their future being*, to which their education can be supposed to bear any relation, is to be considered.

"If I knew that my child would die when he had attained to the age of five or six years, and that his existence would then terminate, I should certainly make no provision respecting him for any thing beyond that term, but endeavour to make him as happy as I could during the short period in which he could enjoy any thing. I would, for the same reason, provide for him only such gratifications as his infant nature was capable of.

"Again, if I knew that he would attain to the age of manhood, but that then his existence would not be prolonged any farther, I should endeavour, as well as I could, to qualify him for acting such a part as would be useful to himself and others in that period, but should never think of extending my plan so far as to enable him to pass a comfortable *old age*, a term of life to which I knew he never would arrive.

"For the same plain reason, a man who believes that the whole period of his own existence, and that of his offspring, is confined to the present life, would act very absurdly if he should train up his children with a view to a future life, except so far as he should think that such a farther, though a chimerical object, might be subservient to his proper conduct in the present life.

"These are obvious considerations, which ought to have their weight with all rational beings; and according to them, the mere *man of the world* must allow, that a *Christian*, who, as such, believes that himself and his offspring are destined to exist in a future life, and that the principles and habits that we form here have a decisive influence on our happiness hereafter, would act irrationally, if he did not use his utmost endeavours to give his children such principles and habits, as would secure to them an interest in a future world.

"Moreover, since a Christian regards this life, principally, as it is subservient to another, which is of infinitely more value, he must consider the duties of religion as the *first* thing to be attended to by him, and must be taught to disregard all authority that would enjoin upon him a conduct which would be detrimental to his greatest and ultimate interest; because he will gain more by his steadiness in his regard to a higher authority, than he can lose by opposing an inferior power.

"The first thing, therefore, that a Christian will naturally inculcate upon his child, as soon as he is capable of receiving such impressions, is the knowledge of his Maker, and a steady principle



principle of obedience to him ; the idea of his living under the constant inspection and government of an invisible being, who will raise him from the dead to an immortal life, and who will reward and punish him hereafter according to his character and actions here.

"On these plain principles I hesitate not to assert, as a Christian, that *religion* is the first rational object of education. Whatever be the fate of my children in this transitory world, about which I hope I am as solicitous as I ought to be, I would, if possible, secure a happy meeting with them in a future and everlasting life. I can well enough bear their reproaches for not enabling them to attain to worldly honours and distinctions ; but to have been in any measure accessory, by my neglect, to their *final perdition*, would be the occasion of such reproach and blame, as would be absolutely insupportable."

In the remainder of this article, we shall pursue the following plan. We shall *first* enter pretty much at large into the sources and culture of the *filial affections* : *secondly*, we shall state some important *principles respecting the affections in general*, introducing, by way of inference and illustration, some of those observations which, agreeably to a more extensive plan than we find our limits will permit, we had proposed to make the subject of separate divisions : *thirdly*, we shall make some remarks respecting the specific culture of the moral principle, or *conscience* : and *fourthly*, we shall conclude with some observations more directly respecting *religious education*, in the earlier periods of it.

I. *Filial Affections*.—These may, in various ways, be considered as forming the general basis of the whole moral structure ; and we have no doubt that upon the manner in which they are formed and cultivated, the happiness of the individual, and the excellence of his character, very greatly depend. We of course include, under the term *filial affections*, those which respect not merely the actual parent, but persons who may, from the loss of that relation, or other causes, stand, more or less, in the place of the parent during the early periods of education. Correct views, as to the origin of these and other affections, will be found of incalculable importance in the cultivation of them ; and we shall here give a brief analysis of the filial affections, with a view both to assist in the proper cultivation of them, and to throw some light on the means of cultivating other classes of affections.

A child receives almost all his earliest pleasures from his parents, or in connection with them. These all leave behind them feelings which the ever active principle of association unites and blends together, and connects with the appearance, and idea, and name of the parents ; and thus renders it pleasant to a child to see them, and to hear and think of them. By degrees he learns to distinguish them, as the cause of many things which give him pleasure : he perceives them endeavouring to do what will make him feel happy : he is the object of a thousand tender endearments and kind offices ; and every thing of this description, which at all affects his mind, leaves some impression behind it, which unites and blends with the feelings before produced, by other similar circumstances. Thus gradually rises up in the mind, that part of the filial affection which we term *love*. If children have little intercourse with their parents, or that be little productive of pleasing feelings, their love will be weak ; in other cases it often early proves very powerful. It cannot advance far, without exciting in the mind of a child the disposition to do what he finds will please his parents. He is early incited to this by the promise of some gratification, by the expectation of some endearment, &c. ; and such is the wise structure of our mental frame,

VOL. XXIV.

that what is often done with a view to some good, gradually becomes itself pleasant, and is done without any direct view to that good. Thus a child forms a *desire to please* his parents, which constitutes another part of filial affection. Again, in a wise education it will often be found necessary to check the gratifications of a child, to use the language and tone of displeasure, and sometimes even to inflict pain. Every circumstance of this kind leaves behind it an impression, which uniting and blending with others of the same kind, produces the feeling of *fear*. If this, owing to any cause, is excessive, it gives to the filial affection a character which makes it rather the source of pain than of pleasure, and sometimes even overcomes the love. On the other hand, where it is moderate, (arising only from that degree of privation or pain which is necessary for the future welfare of the child,) so far from lessening the happiness of the filial affection, it increases it, blending with the love so as to lose its own painful influence, and, at the same time, giving firmness and even vigour to filial love, by heightening the disposition to obedience, and thereby increasing the pleasing consequences of obedience, by heightening the fear to offend, and consequently preventing the ill consequences of disobedience. Thus by pleasures derived from the care and tenderness of parents, and by the privations and pains which their care and tenderness may alike cause, a vast number and variety of impressions are produced, which, all uniting and blending together, constitute the filial affection, consisting principally of fear and love, the desire to please, and the fear to offend. As the child advances in knowledge, and as the conscience acquires its power, the sense of obligation, the perception of the virtues of his parents, the feelings which he is led to entertain towards God, and a great variety of other sources, contribute impressions of *duty*, of *gratitude*, of *respect*, &c. towards the general affection, uniting and blending with it, and increasing its strength and vigour ; so that it often becomes a leading affection through the whole of life.

We have taken only one case, but the reader may easily pursue the same plan in other cases. Perhaps it may be truly said, that in no two instances is the filial affection in every respect the same : it is formed from impressions so numerous, so various, and often so peculiar ; and depends so much upon peculiarities in the dispositions and conduct of the parent, and in the dispositions of the child.

What may with propriety be termed the *natural* affection of children towards their parents, (arising without the exercise of reflection at all, merely by the operation of the associative principle,) is, we apprehend, almost always the strongest towards the mother ; at least if she has also been the nurse : and as the pleasurable feelings of infancy do greatly contribute their share towards the formation of more complex pleasures, and as they cannot be replaced but by a long series of exertions, a mother who wishes to possess the highest degree of her children's affection, and the greatest influence in the regulation of their conduct and dispositions, must also be their nurse. We have often heard of what are called the *instinctive* feelings of filial affection. The term *instinct*, when applied to the human mind, we regard as a mere appeal to ignorance ; but we have no doubt that the early associated feelings towards a parent, particularly towards a mother, may exist long after the direct recollection of her has altogether ceased, and that the sight of her, after long absence, may produce strong emotions in the mental frame, though the memory furnishes no distinct traces of her visible appearance, her tones, &c. ; and though no communication is made respecting her relationship to the individual. We are not disposed to treat all stories of parental or filial sympathies as fabulous : the nature of the human mind is



indisputably such, that the trains of association may be set in motion, without the direct exercise of the understanding, and often without the individual perceiving why the object so affects him.

But to return: parents will naturally feel desirous that their children should possess towards them a lively and durable affection; and that their own moral influence on their minds may be such as to enable them to be of the greatest assistance to them in the journey of life. These two things the wise parent will never separate; we should perhaps say, that so far from being in any way incompatible they necessarily accompany each other. The true point to be aimed at is, so to temper the conduct towards the child, that while he possesses all those enjoyments which are consistent with his present health and comfort, it shall not be at the expence of the future. Whenever the gratification of a child's wishes will necessarily lead on to cravings of greater indulgences, clearly inconsistent with health or comfort, it is easiest and best to stop at the first point. Indulgence is the most easy for the present, but its effects are permanently injurious. It is not too much to say that the over indulgent parent will have less of the *affection* of his children, than he who steadily pursues the plan which he deems most for their happiness. We have already remarked, that displeasing associations, (where not accompanied with a sense of injustice, as they never will be, if a child is properly educated, and a parent has attained a tolerable degree of self-government,) so far from weakening love, do in reality strengthen and invigorate it. Constant indulgence may give a greater degree of softness to affection; but it will never produce what is steady and pure. Affection so produced will necessarily be selfish, till the sense of duty, derived from other sources, comes in to lend its aid: and the strong sense of duty is too seldom to be produced, where the system of habitual indulgence is carried to a great extent. And besides, let indulgence be carried to the greatest possible extent, it cannot always give way to those wishes and desires which it fosters; and the pain arising from refusal is by far the greatest and most likely to weaken affection, where it necessarily has the appearance of caprice, by its occurring in cases where indulgence has often been experienced. It is a difficult medium to observe between unnecessary approaches towards austerity on the one hand, and weak indulgence on the other; and it requires no small degree of mental regulation, on the part of the parent, to preserve it; but where the aim of the judicious parent is steadily directed to the future, while at the same time he endeavours to make the period of childhood the period of natural, simple pleasure, there is no great danger of his going far wrong. He will often be called upon to give up his own gratification (for to an affectionate parent, it must ever be gratifying to promote even the present pleasures of his children); but if his affection deserve the name, if in fact it be not a mere fondness more childish than perhaps he would like to own, though they cannot look beyond the present moment he will; and whenever he perceives that the gratification of their wishes, whether in the way of obtaining direct pleasure, or avoiding something which is painful, would be attended with injurious consequences upon their health or comfort, upon their temper or habit of obedience, there he ought to be firm but mild in his requisitions. Indeed, if there be one thing more than another which constitutes the secret of education, in all periods of it, but most particularly in the earliest period, it is mild consistent firmness on the part of the parent; and where this quality is possessed habitually, or is at least employed in intercourse with our children, and guided in its operations by sound views as to the moral struc-

ture of the mind, the best effects may be expected on their temper, happiness, and worth of character.

But it may be said all this is only general argument; and while the truth of it is allowed, its application is not easily to be seen. We admit it; but we cannot go much farther than general principles; and we are most desirous to lay down such, if practicable, as may aid the conscientious and judicious parent in the most important part of his work. We should term it false indulgence wherever a parent, from fondness or weakness of mind, either permitted or gave a gratification, or gave up a privation or punishment, where the former had been expressly refused or forbidden, and the other expressly determined; where, at the solicitation of his child, he gave him gratification of the palate, &c. which he thought likely to be injurious to him, either by their immediate effects, or by directly leading on to other things which would certainly be injurious; where, in order to avoid the pain of disappointing his child, he allowed him departures from those regulations which he believed to be important to his mental or moral progress; where, in short, the gratification is to his own fondness, rather than arising from an enlightened affection for his offspring. Excessive indulgence is often viewed in a very venial light, in the earliest periods of education, in the education of infancy; but those who carefully watch the progress of the mind, will agree with us in opinion, that indulgence then either prepares the way for habitual continued indulgence in childhood, to the weakening and prevention of the most valuable moral qualities; or treasures up for it, pains and privations and disappointments, which, unless very judiciously managed, must break the activity of the mind, or sour the temper: and that it even lessens the comforts of infancy; for its gratifications cannot always be acceded to, and the more its injurious desires are gratified, the more numerous they necessarily become, so as to be continually adding to its painful disappointments. And this is particularly the case during those diseases which affect infancy, (the final cause of which it is perhaps difficult fully to perceive, but which certainly tend to heighten the affection and tenderness and care of parents, and to increase filial affection in older children, by shewing how much their parents endured for them.) The child whose desires while in health have been made the constant object, will necessarily have tenfold calls for gratification, when, even in the best regulated temper, fretfulness is to be expected; and then the parent experiences the punishment of false tenderness. Every privation, every little painful feeling, is heightened in its effects, because the gratification of the desires does not prevent or remove them; while children whose real wants have been made the guide of gratification, will have fewer wants and desires, and have the best chance of having those answered, and their minds diverted from the present feelings.

The true rule we are persuaded is, to encourage and promote the simple natural pleasures of childhood; to prevent or supply as far as possible its simple natural wants; but not to foster its caprices, to gratify its inclinations, where this must be done at the expence of important habits of obedience, of order, &c., or to give way to its cries, or perverseness, or intreaties, where a different course of conduct would otherwise have been thought most expedient. If the plan of steady consistent firmness be begun sufficiently early, there is no fear of its effects; where it proceeds from an enlightened affection, it will be united with all that will be necessary to produce a lively filial affection in return; and what is even more important; this will have nothing mixed with it that is calculated to check its influence, and to make it unsteady.



We are fully aware of the great difficulty which in many cases exists on the part of the parent to maintain that persevering mild firmness, which we hold to be the most essential quality for success in moral education; but where the endeavours to obtain it, or to preserve it, are prompted by warm affectionate enlightened tenderness, they will seldom fail to operate sufficiently to produce the most important effects. And parents who are under the influence of enlightened and vigorous affection to their children, never need be afraid of their want of affection to themselves. Where they take a share, or at least manifest an interest, in their children's sports, where they obviously contribute, as a parent can, in a thousand little but interesting ways, to the pleasures and comforts of their children, while tenderness is allowed to express itself on all suitable occasions, but does not degenerate into capricious unsteady fondness, there is no reason for apprehension lest they should not be loved by their children. The education which parents must give themselves in order to educate their children properly, is not the least among the moral benefits of domestic life.

Though parents will be often led to express the tenderness which they feel for their children, they must be careful not to expect too much of the appearance, or even reality of it, from them in return. Some children are constitutionally more susceptible than others, and have more the habit of expressing their feelings; and it is certainly very pleasing to the parent, to perceive their little sensibilities manifesting themselves in the direction of filial regard, by those artless expressions which are affecting in proportion to their simplicity and reality: but we are not to imagine, that because others do not use those expressions, that therefore their affection is weak; nor should we draw this inference, even if we have reason to believe, that not only the expression, but the reality, of lively feeling is wanting. The liveness of feeling is one thing, and the steadiness of affection another; and we ought to rest satisfied, if we perceive genuine indications of affection, operating in those ways which best accord with the age and mental progress of the child. We have known a little girl, about two years and a half old, sit for hours in the room with her mother when ill, carefully avoiding all noise in her little amusements: we are certain that the affection of this child (now about three years older) is equally tender as it was, and much more a durable, steady principle; but we much doubt if it could reasonably be expected from her, now her imagination is more lively, and she has been more accustomed to active play with other children, to remain thus quiet while she knows that they are playing in other parts of the house. Nor should we expect, even at the same period of maturity, the same indications of affection in all circumstances. The tired child at night may be unable to shew, or even to feel, that love which was obvious when she awoke brisk as the lark; or the little mind may be occupied with what, for the time, may engross the whole attention, and the whole interests of the mind.

The little attentions of affection should never be made burdensome to children; they cease to have their influence in invigorating it, when this is the case. The ingenuous expression, "Mamma, I will stay with you, if you wish it; but, if you please, I would rather go and play with sister," should never meet with the slightest indication of disapprobation, or of disappointment. Children are not to be expected to calculate as we can do; or act from the dictates of habitual principle. The present pleasure is the most impressive one. If the parent's convenience or comfort require the self-denial, let it be exercised; and let it, if possible, be made pleasant, though without direct reward. But if not, it is better that the self-denial should usually be on the

part of the parent, and nothing will eventually be lost by it.

Expressions of affection should not be the subject of praise, any more than the want of them should of censure or punishment. If commonly bought, or extorted, they will too often, as far as affection is concerned, be mere expressions. We however wish to except the earliest marks of love, where perhaps the love is rather the result of the expression, and its reward, than the expression the natural dictates of the affection. We do not like to see them, even then, however, made so much as is commonly the case the object of bribery or reproach. Nor will a wife parent expect or encourage from a boy, the same degree of affectionate expression, (either in manner or words,) as is not unusual among girls. The physical sensibility of a boy is, or ought to be, less lively. If constitutionally it is not so, the object should rather be to lessen it than to cultivate it. The comparative expressions of affection should never be made the subject of praise or censure: the indications of obedience may. A child can understand whether he is more or less obedient than another, but it is not easy for him to comprehend, that he loves his parents less, because he shews fewer outward marks of affection, except, indeed, so far as they are at the same time proofs of obedience.

Marks of parental tenderness should be so regulated, as to leave no impression of caprice or partiality on the minds of children. If the little efforts of a child to please, or his simple expressions of love, are sometimes received with warmth of satisfaction, and at another time, in the same circumstances, as far as the child is concerned, with coldness or displeasure, it will produce constraint, and operate much against the progress of filial love and parental influence. If, without any ostensible difference in the conduct of different children, one is treated with kindness and attention, and another with at least apparent coldness or dislike, the most injurious effects must be expected, both on the filial and fraternal affection: and the rudiments of envy and jealousy will be certainly and effectually sown. The wise parent will sometimes be obliged to make a difference in the treatment of his children, founded upon the difference of conduct, and perhaps it is often difficult for him to avoid feeling more affection for one than for another, founded upon some accidental or correct association: but the children of one family should perceive no difference in their parents' treatment of them, except when that difference arises from greater or less degrees of obedience or general propriety of conduct.

But after all, the grand point is less to secure *affection*, than to secure *influence*; and as to the former, the parent acting with a view to the future, rather than to the present gratification, and at the same time not sacrificing the enjoyment of the present, from unfounded suppositions as to the power and purity of motives, but aiming to make the period of infancy and childhood as pleasant as it can be, consistently with the benefit of the future, (by furnishing useful and interesting occupation, guiding and aiding the little sports of childhood, &c.) will be every day increasing the number or the strength of those fibres, which will strike a deep root into the heart, and make the plant of filial affection luxuriant, yet hardy and productive. With respect to the latter, we are of opinion, that it cannot be secured too early; and that the more it exists as a habit, the greater probability there is, that filial affection, while it acquires vigour, will at the same time receive fewest of those interruptions, which may be necessary to make the selfish affection of indulgence healthy and strong, but which are not requisite where affection is not produced by capricious fondness, or even by excessive



offensive but steady tenderness, but by enlightened attention to the present pleasure and lasting welfare of a child. We do not mean to discourage parents who have neglected the cultivation of the habit of submission in infancy; if from circumstances which are often unavoidable, self-willedness has then been allowed to gain too much power, still if the processes of moral culture are not too long neglected, and are steadily pursued, though they will be more difficult, they will seldom fail to be successful. Bodily or mental pain will often be found necessary in such cases; but if judiciously administered, and submission mildly, but steadily exacted, the little wayward mind will be brought into habits of obedience, which will only require to be persevered in.

How much this is for the enjoyment of childhood, and how much too for the comfort of parents, those only who have had experience in education can fully appreciate. We have before our eyes an instance in point. An infant about a year old, during the long continued illness of her mother, had been excessively indulged by her nurse; her cries had been encouraged, by making them, rather than her real wants or comforts, the guide of gratification; she had been allowed to exercise her little tyranny and caprice over her elder sister, to the great diminution of her comfort; and, altogether, had been brought too much into that state, in which she bid fair to be a spoiled child. The generally engaging manners of the child prevented her faults from being much observed by others; but those who felt most interested in her happiness, saw with pain the rudiments of extreme selfishness and imperious wilfulness. Their efforts of course were directed to the correction of them; and two or three years care have brought her little mind under much greater controul, without losing any thing of her liveliness or attractive interest; and we can say from minute observation, that in no instance has the punishment or restraint, which has been pretty steadily, but mildly and sparingly employed, been productive of any effect which did not add something to her affection for her parents. Her selfishness is most strikingly diminished, and her obedience (as far as intention is concerned) is certainly decided. The older child of whom we spoke had the advantage of greater early restraint; which, in addition to greater accuracy of observation and judgment, without having any effect upon her happiness, except that of making it more steady, has given her at the age of five or six years, a degree of mental and moral regulation, which we have seldom witnessed in so young a child, united to great sweetness of disposition and activity of mind, and altogether rendering her as happy, we conceive, as a child can be; in various ways increasing her pleasures, and freeing her from the most bitter feelings of disappointment.

We trust we shall meet with our readers' excuse in these details. We are not desirous of inventing theories; we do not expect to communicate much information on the subject, to those enlightened and judicious parents who have already given it their full attention; but we may corroborate their experience; and our wish is to enable ourselves to indulge the hope, that our labours will be found of practical value to those who have yet to learn something on the subject. To them we also recommend the study of Miss Edgeworth's chapter on obedience. Mr. E's. preface informs us, that it was written from the notes of the late Mrs. Edgeworth, and it shews a judicious acquaintance with some of the most important practical laws of the mind, and must furnish to every parent valuable hints in different periods of education. As *Practical Education* is probably accessible to all our readers, we shall here satisfy ourselves with recommending the whole chapter to their careful perusal, and merely

making a few remarks on a position which we think erroneous.

"When children begin to reason," says the author of this chapter, "they do not act merely from habit; they will not be obedient at this age, unless their understanding is convinced that it is for their advantage to be so." From this position we altogether dissent. We admit that they should not then act merely from habit; that it is wise in parents to make the reasons of obedience obvious, to gain their understandings on their side; but we feel authorised to say from experience, that affection and habit united, will, long after a child begins to reason, continue to be the most powerful motives to obedience. Affectionate and well-trained children learn confidence in their parents, more we venture to say from the want of any thing to destroy confidence, than from the actual perception of the beneficial ends of parental injunctions. Not that this should be neglected, not that the reasons of our injunctions should never be pointed out, where they can be made intelligible to the minds of our children, and the advantage of attending to them made obvious; but they should be accustomed to act upon that confidence; it should be founded on the habitual truth and kindness of their parents, and upon a perception, early acquired, that they submit to much that is painful, and to many privations to do their children good, upon a conviction which will do much more than reasoning, that their parents know best what is advantageous for them, and are very desirous to make them happy. Let the understandings of children be enlightened on these points, as they can bear it; but if submissiveness have been steadily and early enforced, and the parents' conduct be free from whim and caprice; if affection have been cultivated by steady, watchful kindness, and tenderness, prompting to refrain from every instance of false indulgence, and of weak submission, where the submission should have been entirely on the other side, there will be obedience without any calculations of advantage; and we do not hesitate to say, that such an obedience of confidence and affection is, at present, worth much more as a moral quality, and will have greater influence through life, in the regulation of the heart.

Perhaps we differ from Mrs. Edgeworth, more in appearance than in reality; but we are inclined to consider this as one part of a system in which prudential considerations seem to us to have too much sway, and regard to duty as such, too little. We speak from experience when we say, that when the understanding is sufficiently ripe to reason, it also is to feel the motives arising from a sense of duty; and we place our chief dependence upon our continuing to supply the principle of obedience, with all the strength which habitual submission, affectionate confidence, and a sense of duty would contribute to it. At the same time we are fully aware, that with a view to that confidence, the reasons of our injunctions should very often, indeed generally, be unfolded as much as is practicable. But where the disposition to submit has been habitually and thoroughly produced, where there is affection and moral principle to work upon, we have a much stronger hold upon the mind, than by making the *why*, and *why not*, the source of obedience to our injunctions or prohibitions. It is often difficult to calculate what exactly is understood of our reasonings; and frequently where the understanding is sufficiently advanced to understand them, the feelings, in some way or other, often either prevent the inferences from being seen, or at least weaken their efficacy on the conduct. Where the habitual disposition to obedience has been long and early cultivated, there the reasons of a parent's conduct, if within the reach of the child's understanding, will be most easily perceived, and every



every instance in which they are unfolded will then contribute to increase the habit, as much, perhaps, as the habitual impression of parental wisdom and kindness, but not more than this.

We shall now proceed to state the principles which appear to us to be the most important in procuring obedience. We should begin early, indeed it can scarcely be too early, to accustom our children to habitual attention to those regulations respecting diet, rest, &c. which we deem best adapted to promote their health and comfort. The cries which indicate real want should always be attended to, or, if possible, anticipated; but the cry of humour, or the little tones of impatience, should never gain their end. In such cases, the proper way appears to be, to change the current of thought by diverting the attention from the object of painful feeling. Obedience should as much as possible be associated with pleasing feelings. These may sometimes be left to be supplied by the natural consequences of obedience; but often, in the early stages of the habit, they may be fictitious; and in all stages, parental approbation, and its effects, should be associated with obedience, and the contrary with disobedience. Where the object of parental directions is not left to a child's choice, the expression of them should not be such as to excite the feeling of desire to choose; injunctions should always be decisive though mild. We have no wish that children should be mere machines, to move only as they are moved; they should often be left to the promptings of their own inclinations, where these do not interfere with the plans of the parent for their improvement and happiness; and it is only thus that their understandings can acquire strength, or their minds, in general, obtain activity or life. But whenever there is such interference, then prompt obedience should be secured; it should never be imagined that disobedience will be permitted or connived at. The directions of the parent should be explicit, decisive, and unalterable; if obedience is to be conditional, and made dependent upon circumstances, those circumstances should be clearly understood. It appears best, however, to *exact* obedience but little; if the habit be early begun, it will not often be requisite to do so; it will be enough to let the simple *wish* of a parent be known; but where it is come to the point of direct obedience or disobedience, it must be carried through. It must never be within the child's experience, that he has gained a victory over his parents. The parent should, however, be cautious of bringing matters too often to this crisis. And it should always be in things which are practicable, and where obedience can be compelled if necessary. This point is well illustrated by Mrs. Edgeworth. Neither will the judicious parent exercise the habit of obedience beyond its probable strength, in opposition to violent motives to the contrary; in such cases, if obedience from any cause is requisite, opportunity should be given to lessen the power of those motives. An instance has just occurred to our notice: A. (now four years old, the child of whom we before spoke,) was sitting on the arm of her little chair. Her father thought it dangerous, and desired her to leave it, which she immediately did. To make her understand the danger, he told her to sit upon it again, and he would shew her how easily she might have fallen. The child had had a fall a short time before, which he did not know; and the apprehension of falling again, though he told her she should not be hurt, overcame confidence and obedience, and she refused, but without any ill humour. Her father desired her elder sister (five years and a half old), on whose confidence and obedience he could depend, to mount; and the experiment was tried without hurt or danger. The younger child at once followed her sister's example. Where the present tempta-

tions to disobedience are great, and the habit of obedience weak, there it is wisest to remove or prevent the temptation; and certainly the habit should not be too much exposed to trials; but if they are proportioned to its strength, and agreeable consequences in parental approbation and its effects be associated with the exercise of it, they tend much to give it life and energy. We think we have seen considerable advantage arising from some very early fictitious trials of obedience, respecting abstinence for a short time from little gratifications of the palate. Where these do not produce an ill effect they certainly produce a good one.

Notwithstanding what we have already said, we cannot forbear quoting, from Practical Education, a very important principle, to which we perceive we have in no way referred. "Praise, and looks of affection, which naturally express our feeling when children do right, encourage the slightest efforts to obey; but we must carefully avoid shewing any triumph over yielding stubbornness. When children are made ashamed of submission, they will become intrepid, probably unconquerable rebels."

One other circumstance of great consequence we must not omit to mention,—that parents should not interfere with each other's injunctions; the authority and influence of each should be steadily employed to support the authority and influence of the other. Whatever discussions and disagreements as to plans and principles take place, it should not be in the hearing, at least in the understanding, of children. They should see both their parents as much as possible actuated by one mind. Where both go hand in hand in the work of early education, great hopes may be entertained, that their future influence will be what is so earnestly to be desired, for promoting the happiness and moral worth of their children; where there is a want of unanimity in views and feelings, considerable difficulties will exist, and great prudence must be employed. For such cases we find it difficult to offer any specific directions. If one of the parties possesses judgment and good temper, (especially if that one be the mother,) the unhappy effects of difference may in a great measure be avoided; but of course the benefits of unanimity cannot be expected.

We have not said any thing in relation to the external appearances of respect which children should preserve towards their parents. Though we value (filial, not slavish) obedience above every thing in the conduct of the child towards his parent, yet we are decidedly of opinion, that those modes of expression should be taught and required, which are consistent with the leading characteristics of the filial relation. Affection should never degenerate into that rude familiarity, which by degrees will destroy the internal feeling of respect. Habits of civility should early be required, not only on their own account, but also from their intimate connection with the exercise of some of the most valuable qualities of childhood and youth. We do not mean that filial respect is to be secured by enforcing the external indications of it; but it is agreeable to the laws of the mind and to common experience, that those external indications will assist in generating or strengthening the feeling, when its foundation is laid on the parent's possessing the qualities requisite for its permanency.—To what extent this principle should be carried, we do not feel able to decide; it must essentially differ in different cases. Our forefathers probably carried it far beyond the limits of reason; we appear to have gone to the opposite extreme; but as the feelings of respect are assuredly necessary, in order to give consistency and durability to the higher ingredients of the filial affection, we should be careful lest, through the wish to secure the love of our children, we lose the advantage of their respect.

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They should be taught to honour their parents, as well as obey them. We have no wish to curb the playful fallies of childhood; we have no wish to see parents exclude themselves from sharing in and heightening their enjoyments; from occasionally being their playfellows as well as their instructors; but in the midst of all, they should remember their relation; they should check the marks of disrespectful rudeness; and aim themselves to keep the adjustment of the balance between affection and respect, which cannot otherwise be expected from their children. We are, perhaps, in the present day, rather too much afraid of forms. They often, indeed, serve instead of the substance; but in many cases, they tend to give support to the substance, and even, by the re-acton of association, to produce it. We conceive that it is very desirable to begin, in children, those little attentions to their parents' comforts and conveniences, which, as they advance towards youth and manhood, contribute so much to strengthen the affections. These should, however, be encouraged, rather than exacted; and the parent should carefully avoid expecting them too much, and making them the criterion of affection, &c. especially, as we have already stated, with respect to boys. But if they are begun sufficiently early, they will not be burdensome; and while they cherish grateful feelings towards the parent, they will also assist in cultivating that habitual attention to the little wants and conveniences of others, which forms the most valuable ingredient in politeness, and which contributes so much to the pleasures of domestic life.

Gratitude is a more delicate plant than civility and respect; and must be left very much to itself. By occasionally leading the minds of children to observe, for themselves, the degree of exertion and self-denial which their parents undergo, in order to promote their happiness and improvement,—by shewing them how many advantages they possess, owing to the kindness of their parents, which other children do not or cannot have,—by our own simple expressions of gratitude for favours shewn ourselves, and by bringing them to the employment of similar expressions for the kindnesses of their friends towards themselves;—in short, by indirect rather than direct culture, that most valuable quality, a grateful disposition, may be produced. If, by experience and observation, children are led to perceive their dependence, they will soon learn to be thankful for the benefits they receive; but we expect little from those expressions of thankfulness, which, from being regularly exacted, without regard to the state of the feelings, must become a mere form. Where the soil is properly prepared by the culture of obedience and filial regard, gratitude will grow without much trouble; it more requires the aid of the understanding, than these do; and it requires, too, a higher state of excitement of feeling. The little mind must be alive and engaged on the subject, in order to feel gratitude; and the direct expressions of this, or any other feelings, should not be encouraged where the feeling itself does not at the time exist.

In the periods of infancy, habitual, but not painful, submissiveness, is what we are to aim at. In childhood obedience must continue to be habitual, but its foundation should be enlarged by confidence, love, and fear; and as the understanding expands, to these should be added, the influence arising from the actual perception of the beneficial effects of obedience, which it is well for children to be led to trace out for themselves, rather than to have them brought too forcibly and distinctly into view. In the more advanced period of childhood, implicit submission should be less and less expected. We do not mean that obedience should not be required, wherever obedience is enjoined; but that the conduct of the child should be more

left to be guided by his own choice. Where the habit of obedience has been early begun, and long continued,—where it has been cultivated as a quality of the utmost importance in the moral structure, and not from the parents' love of power,—and where it has been exercised with mild firmness, the expression of parental wish will usually be found sufficient to lead the child to that plan of acting which the parent judges best: but as our object in education should be to fit our children to act well their parts in life, we must gradually loosen their dependence upon our guidance, without weakening their disposition to follow it, whenever we think expedient to give it. Our children should more and more become our friends; and the tone and manner of authority should give way to the mild influence of filial affection and duty. They should be led to perceive how much our happiness depends upon their right conduct; how much it is their duty, from every motive, to endeavour to promote our happiness; but we should take care to avoid communicating to them the impression, that we think more of our own than of their's. We are not aware of any way in which this can be effectually avoided, but by really studying their welfare as the first object, and regulating our plans by an enlightened view to it. Where they can be led to perceive the end of our solicitude, and how much it does contribute to their happiness, our influence must necessarily be increased: and though we should never loosen the feelings of obedience, though till the understanding has acquired full vigour, and some experience has been made of the firmness of principle and the soundness of judgment, we should in reality exercise the habit, and not by any means throw off its restraints, yet it should be our steady aim to keep them from being felt, and to secure obedience less through the medium of parental authority than of parental influence.

We are not without a deep sense of the difficulty of all this. We are aware that it requires great self-control on the part of the parent, and in many instances a new kind of education; and the difficulties of executing these desirable objects are increased almost indefinitely, by not beginning early enough. Even if we have been happy or wise enough to do this, yet unless parental authority has been steadily guided by an enlightened view to the benefit of the objects of it, it will be a difficult task to slide imperceptibly from the direct exercise of it into the milder but not less efficacious form of parental influence. And for that influence we must look most to the maternal parent. If her endeavours have been successfully directed, in the earliest periods of education, to obtain a consistent, steady authority over the minds of her children,—if, as they advance in life, it has been supported by the more obvious and direct authority of the father, by respect for her understanding, by grateful affection for that winning tenderness which seldom appears much in a father, even where it is powerfully felt,—if it have not been weakened by false indulgence on the one hand, or on the other by the disposition to rebel, not unfrequently produced by its excessive exercise,—a mother's influence will be felt through life, and will prove a most powerful aid in promoting the moral culture and happiness of the child. Direct parental authority is, we think, more likely, from various causes, to be properly modified in the female sex; but we are also satisfied that where a father, by just regulation of his own views and feelings, leads his children to love as well as respect him, and as they advance towards riper years to regard him as their friend and wise adviser,—where he leaves them to themselves as much as is requisite to give them experience in life, and introduces the direct authority of the paternal relation, only where it is really necessary for their welfare,—he, too, will have a moral influence on their minds, which will make his instructions



stratagems of powerful efficacy through life, and probably prevent his children from taking any important step without, at least, honestly receiving the advantage of his advice. Still, from the necessary avocations of the male sex, and the usual engrossment of their time and thoughts in employments which, at least, are not domestic, the education of infancy and childhood, and much of the most important moral culture of the more advanced periods, will be derived, if obtained at all, from the female sex: and on this account, as well as with a view to their own happiness, we earnestly wish to see the cultivation of their judgment made much more an object than at present it appears to be, and to perceive that their education has in view to qualify them for the most important and interesting domestic relations, rather than to shine in the sphere of fashion and accomplishments.

Our observations directly respecting the filial affections, have extended beyond what we at first contemplated; and we shall still have occasion to revert to them. But they lie at the foundation of moral education; and the analysis and means of cultivating one class of the affections, throw great light on the origin and culture of others. We shall now proceed to some more general considerations respecting the

II. *Practical Laws of the Affections* in general, so far as they particularly respect the processes of education. All the affections are formed in the same way as our other compound ideas, (to use this term in its most extensive sense,) viz. by the agency of the associative power, in combining together, in various ways, the relics of sensations, or the previously formed combinations of them. (See *Intellectual Education*, col 2, 3.) It is thus that the whole system of mental pleasures and pains is constructed; even of those which ultimately become the most refined, and the most remote from every appearance of mere sensation. The sensible pleasures and pains leave feelings behind them, corresponding to the ideas of sight or sound, derived from their respective sensations. These feelings become associated with other feelings derived from the same or similar external objects; and when the union has been exercised sufficiently long, they become blended together, so as to form a complex though apparently simple feeling, which itself may become united with other complex feelings, and so on. The greater the number and diversity of the component feelings, the more remote will the complex feeling be, from resemblance to the original sensible pleasure or pain. These complex feelings are continually receiving fresh materials, from the union and combination of the simple feelings derived immediately from sensation, of the various complex feelings associated with those sensations, and of those which in different ways are called up by the links of association more immediately connected with the powers of memory, imagination, and reflection. Altogether, in many instances, the vividness of the mental pleasures and pains may be as great as those of sensation; and indeed we know, as a matter of fact, that the influence of the former on the mind, is often much greater than that of very vivid pleasures and pains of the latter class.

As much as this, one would conceive, must be admitted by all who have attentively considered the laws of association, and the actual processes of their own minds in the formation, or variation, of the feelings associated with any object, and the gradual formation and refinement of the feelings of children. Whatever may be thought respecting the resolution of all the mental powers into sensation, retention, and association, (see *Intellectual Education*, col. 2.), there seems to be scarcely room to doubt, that all the internal objects of those powers, all the notions and feelings of the mind, do arise from the relics of sensation, variously combined and modified by the agency of the associative power. The

sensible pleasures and pains of childhood, therefore, though in their immediate effects evanescent, are of great consequence as the rudiments of mental feelings; and with a view even to the moral culture of the mind, it is of great importance, during the early part of life, to keep the inlets of sensation in a fit state for receiving its pleasures and pains, and not to check the one, or impose the other, except where an enlightened regard to the future welfare requires it. The health of the body should be attended to, not merely as a means of present and future sensible enjoyment, but as increasing the fund of materials for the purest mental pleasures. Childhood should be regarded as the time for the acquisition of materials, not only for the intellects but for the affections. Its pleasures should be restrained only by those limits which the laws of sensation and association impose; which require that they should be moderate, and connected only with such objects as will not lead to future pains. Its unavoidable pains should, as far as possible, be removed; and no avoidable ones should be imposed, except what the laws of association require; that is, those which are necessary for removing or preventing of greater evil, either by remedying bodily disorders, and destroying false associations, or by connecting sensible pains with such objects as would lead to future pains, more important either as to vividness or duration.

Considering the natural, simple pleasures of childhood, therefore, as the rudiments of those which are to accompany the individual through the whole of his existence, as what will form a part of the most refined and important feelings, we ought not to view them with indifference or disdain. Our object should be to promote them; and as long as they remain within the limits of nature, we need not be afraid lest they should produce any injurious effects on the mind. It should be our aim, as the mind becomes capable of relishing more refined pleasures, to call it off gradually from making the pleasures of mere sensation a primary consideration; but we need not be too suspicious of these, especially during the earliest periods of education. The pleasures of taste, for instance, contribute an essential share towards the formation of some of the most valuable and refined feelings; and while we take care to prevent their being made the food of self-indulgence, and to keep the mind from resting upon them as of themselves essential to the happiness of life, we may make them of great service in the cultivation of the best affections. The filial affections certainly have their origin in these pleasures; and they furnish some of the most powerful ingredients in the early formation of the other social affections. Hartley is of opinion, that a great part of what he terms the intellectual pleasures, (or, as we should prefer calling them, mental pleasures,) "are ultimately deducible from those of taste; and that one principal final cause of the greatness and constant recurrency of these pleasures, from our infancy to the extremity of old age, is to introduce and keep up pleasurable states," of feeling, "and to connect them with foreign objects. The social pleasures," he continues, "seem in a particular manner to be derived from this source; since it has been customary in all ages and nations, and is in a manner necessary, that we should enjoy the pleasures of taste in conjunction with our relatives, friends, and neighbours. In like manner," he adds, "nauseous tastes, and painful impressions upon the alimentary duct, give rise and strength to mental pains. The most common of these painful impressions is that from excess, and consequent indigestion. This excites and supports those uneasy states, which attend upon melancholy, fear, and sorrow." Hence, while we keep our children carefully aloof from the habit of gluttony, both on account of the future tendency;



tendency to it, and the present pains and injurious effects of it, it appears abundantly clear, that we ought not, from a refinement unfounded in the laws of the human mind, to refuse to make the pleasures of taste, during the early stages of the moral progress, subservient to the culture of valuable affections. There is no reason why, in those stages, its simple enjoyments should not be associated, (in the way of consequences or rewards,) with right conduct. They will contribute something towards the general stock of pleasure resulting from the discharge of duty, long after the mind would feel uneasy at receiving them as the *effects* of it, and absolutely spurn them if considered as *rewards* for it. It is by no means necessary, even in those early stages, that these pleasures should be made of themselves important, or be regarded in that light by the child: they may be made merely the symbols of parental approbation or parental affection; and deriving interest (we may say their chief interest) from that circumstance, they also contribute to make such approbation and affection more pleasurable, and therefore more the object of desire.

We have before our eyes, instances in which this process frequently goes forward, without presenting the slightest reason to apprehend, that the pleasures of taste will acquire a factitious importance, or that the habit will be formed of undue relish for them. They evidently contribute a large share towards the promotion of filial and fraternal affection; and these, in their turn, in various ways restrain the excitement of these pleasures beyond their due limit, and make them interesting, rather by the associated circumstances, than by the sensations themselves. The effect of that restraint, without making any direct object of it, we have had a satisfactory opportunity of witnessing. The child of whom we have already spoken as unhappily managed by her nurse, now a little more than four years of age, a year or two ago was accustomed eagerly to devour little niceties which were given her, avowedly to have the part which she knew her elder sister would give her from her own share. At present, she has not only ceased to expect this unreasonable attention to her venial, but undesirable gluttony, but is almost always ready and willing to give up part of her own share to her sisters or parents; and seems to take little pleasure in eating, unless one or other of those around her is sharing with her.

Children are much more likely to acquire habits of gluttony, or excessive but fastidious indulgence of the pleasures of the palate, from what they see around them among grown-up persons, than they are from the simple gratifications of it which suit their age, and unsophisticated tastes. And we are not afraid of employing them among the incentives to the commencement of habits, and among the rudiments of affections, which are of the highest importance to the moral worth and happiness of the individual. It may to some appear a paradox, but we have no doubt, that even the affections which respect the Supreme Being, derive some of their ingredients from this source, through the medium of the filial affections: and we are perfectly satisfied, that if this and other sources of sensible pleasures and pains could be dried up in infancy, without destroying the sensations which merely contribute to form perceptions, the man might, to a certain extent, be an intellectual being, but would be without internal feelings or affections of any kind: he might be supported in life by the care of others; but he would be without any motive to action, except what operates through pure intellect: he would be without desires or aversions, hopes or fears.

Though for our purpose very great precision of nomenclature does not seem necessary, and we have gone on a good way without explaining our terms, yet it may not be useless

to employ a paragraph in endeavouring to give some idea of the classification of our mental feelings to that respected class of our female readers, (for such we hope to have,) who have not yet entered much into the study of mental philosophy. We have no wish to see the female sex spend their time on *metaphysical* speculations; but the aid which an acquaintance with the practical laws of our frame, (with the grand principles of association,) affords in the work of education, particularly of early education, is almost incalculable. Supposing that by association a very complex pleasurable feeling, formed also by association, has been so connected with any object, as to be excited by the sensation or idea of that object, by degrees the object is considered as the source of that feeling; and the pleasurable feeling, blended with the idea of the object's being the indirect or immediate source of it, is called love: the opposite feeling, produced by corresponding but opposite associations, is called hatred. We do not here speak of the particular modifications or restrictions of these feelings, which are endless, but of the general feelings excited in our minds by objects causing, or being supposed to cause, pleasurable or painful feelings. When either of them (the love, for instance) is habitually connected with any object, it is called an *affection* for that object; and all its various modifications, however and in whatever degree produced, (if they are more than the ebullitions of the moment, being permanent feelings, ready to be excited by the appropriate object in appropriate circumstances,) are also termed *affections*. If from any strength in the exciting cause, or peculiar sensibility of the frame, or peculiarly active associations connected with objects of a specific cast, that cause produces a vivid excitement of feeling, which (though it may last, perhaps, for some time, if not excessive in degree) gradually loses its vividness, and altogether ceases, or settles down into a more permanent, but less lively feeling,—that vivid, vigorous feeling is denominated a *passion*. The mind may have such a predisposition to a certain set of passions, that these may be easily excited, and by every such excitement increase the disposition to future excitement, and at the same time add to the strength and vividness of the more permanent corresponding affections; but the passion cannot, from the nature of the mind, last very long in a state of great excitement, unless there be a continued repetition of the exciting cause; and if such is frequently the case, the mind must by degrees become diseased, and be constantly on the verge of insanity, in some or other of its forms. From this account it appears, that the passions and affections principally differ from each other in their degree and duration. There is a third class of feelings, which may more properly be called *emotions*, than either passions or affections. These are states of pleasure or of pain, following the excitement of some affection, and generally accompanied or blended with trains of conceptions and thoughts, but which have not that vividness and strength which is essential to a passion, and are less generally than either passions or affections explicitly referred to their exciting cause. Love and hatred (which terms we here employ in their most extensive senses, as not necessarily including either good-will or ill-will, in any of its different degrees) may exist in the state of passions, as well as of affections; and their milder states of excitement are properly termed emotions. In certain circumstances, they excite to obtain the object of love, or to avoid the object of hatred, and they are then called desire and aversion; with which qualifications, also, they may exist in the state of affections, emotions, or passions: but, in general, the two last terms are most appropriate. Hope and fear arise from the probability or uncertainty of obtaining the good desired, or avoiding



avoiding the evil shunned. These can scarcely ever be termed affections; they are rather the passions or emotions springing from the affections of love and hatred. In like manner, joy and grief (which are strongly excited states of feeling, arising from the possession or loss of some good, or the avoidance or endurance of some evil) are seldom sufficiently steady and permanent to receive the appellation of affections, but are properly termed passions, and their milder states of excitement may be well denominated emotions. A tendency to the exercise of a class of affections, or to the excitement of a class of emotions and passions, is called a *disposition*. The *temper* seems to comprehend the dispositions in general, whether they relate to social or personal affections, provided they are habitual, and affect the external conduct, (words and actions,) in our intercourse with those around us. All the affections, emotions, and passions, in every state of excitement, and under every modification, are comprehended under the general term *feelings*; but since the affections (whether existing in the tranquil state of simple complacency or displacency, or operating to produce desire or aversion, &c.) are the sources from which all the emotions and passions spring, we speak of the culture of the affections as in reality comprehending the regulation of the whole system of feeling.

We will now state, in a connected form, the leading principles respecting the affections, &c. which appear to be of the chief importance in regulating the plans of moral education; and then proceed to offer some remarks and illustrations founded upon them, which may assist the judicious parent in employing them.

1. The affections, according to the statements we have already made, are derived immediately from sensible pleasures or pains received in connection with any object, or from compound feelings already formed by association, or from both together. They depend, therefore, for their formation, upon the general activity of the associative power, upon the proper supply of materials from sensible or mental pleasures and pains in connection with the object, upon the physical sensibility of the frame, and upon the facility and vividness of the powers of recollection and conception. The same series of external impressions, (if such a case were possible,) continued through the whole processes of education, would not, in individuals of different physical temperaments, or different degrees of vigour in the mental powers, produce the same system of affections: nevertheless, in their leading features, the same external impressions will commonly generate similar affections.

2. The affections which have been formed towards any object are capable, in favourable circumstances, of being transferred to another possessing (or supposed to possess) the characteristic qualities, owing to which they were originally formed: and in proportion to the degree in which these are (supposed to be) possessed, and to the variations which exist in their combinations and connected qualities and relations, will be the modifications which this transference will produce on the original affections. And it is an extremely important circumstance respecting the transference of affections, (by which, here and elsewhere, we wish to be understood to mean, not the removal of them from the original object, but the association of them with one which did not before possess them,) that it may take place through the medium of the intellect alone, as well as by external impressions; by the exercise of the memory, the understanding, or the imagination, as well as by actual sensation. If correspondence or similarity of relation or qualities is perceived in two objects of the mind, the feelings associated with the one will, in pro-

portion to the degree of that correspondence or similarity, become associated with the other.

3. The vigour (including vividness and steadiness united) of any affection will depend upon the vividness and number of the component parts, upon the susceptibility or fixity of the physical and mental constitution, upon the aid it receives from the influence of sympathy and intentional culture, upon its similarity to the prevailing dispositions of the mind, and upon the frequency and continuance of its exercise, as a whole, in some or other of its component affections. But,

4. Though the vigour of an affection depends, in a great measure, on the frequency of the excitement of the feelings composing it, yet mere feelings, unaccompanied with the active employment of them as motives, rapidly lose their vividness and strength, unless supplied with repeated accessions of the component sensations and simpler feelings. The best way to cultivate any worthy affection is to bring it into exercise as a motive to action, while, at the same time, we supply it with fresh materials derived from sensation, sympathy, foreign excitement (if necessary), and, above all, its own appropriate pleasures, arising directly from its exercise, and from the perception of its influence on personal or social happiness.

5. Affections (whether of love or hatred, of desire or aversion) may be eradicated, if they have not been too long exercised, and too much associated with the general dispositions of the mind. They may indeed acquire such power, that they can be rooted out by no human discipline or efforts; but such can seldom be the case, during the usual periods of education, and especially the early periods. To destroy any wrong disposition will be difficult, in proportion to the degree in which it has gained habitual power, and in which it is supported and cherished by other related dispositions: but it may commonly be effected by perseverance in the judicious and steady culture of opposing dispositions, in the careful avoidance of the causes of its excitement, and in the regular restraint of its exercise by negative discouragements, or by positive inconvenience and mental or bodily pain, according to the nature of the disposition, and to the general qualities of the temper.

The *refinement* of mental pleasures or pains consists in their remoteness from sensation; the *disinterestedness* of affections, in their having no farther end than their own immediate object.

6. The refinement of our feelings is a very gradual process. It depends upon the variety of the sources of sensation, upon the strength of the retentive power, upon the activity of the associative power, and upon the supply of suitable materials for the formation and growth of the different classes of mental pleasures and pains. When complex feelings of different classes are formed, they contribute, in a variety of ways, through the operation of the associative power, to modify one another, and to produce still more complex feelings; and the greater the variety in the sources and character of the component parts, the greater will be the remoteness of the compound from all resemblance to sensation. Even sensible pleasures and pains, derived through different inlets of sensation from the same or similar objects, will, by the operation of association on the simple feelings which they leave behind them, form complex feelings scarcely indicating sensation as their immediate source: and the same might be observed respecting those complex notions, which, under the name of abstract or general ideas, so much puzzle philosophers, who have not been accustomed to the Hartleian processes of investigation. "Some degree of spirituality," says Hartley, (meaning that state of mind



in which its pleasures and pains are not sensible,) is the necessary consequence of passing through life. The sensible pleasures and pains must be transferred more and more every day, upon things that afford neither sensible pleasure nor sensible pain in themselves, and so beget the intellectual pleasures and pains." Nevertheless it cannot be doubted, that those means of intellectual and moral culture, which are supplied by the pursuits of literary, scientific, and religious knowledge, do greatly accelerate the progress of the mind towards spirituality: and this is still more effected, by the gradual cultivation of the motives of benevolence and piety, and a sense of duty. Whatever pursuit or pleasure calls off the attention of the mind from mere sensation, or the pleasures most nearly allied to it, contributes to its progressive refinement. Still that refinement must be gradual. If we attempt too soon to lead the mind away from sensation, we shall only impede the progress: we shall stop the sources of mental pleasures and pains, and thereby weaken them and their influence as actuating motives; and thus we shall either lessen the vigour of the intellectual structure, so far as to prevent all energy of character, or, what is perhaps more probable, and more to be dreaded, we shall make the mind the slave of sensible pleasures and pains, when it ought to be advanced beyond their primary influence. Childhood is the period for sensation; we do not mean exclusively, but principally: and he who, during it, attempts to check its pleasures, farther than is necessary to prevent present or future pains, will, as far as his culture is effectual, either turn youth and manhood into childhood, or altogether nip the blossom of vigorous, steady affection. If, however, this perversion of nature is accompanied by the cultivation of a strong and actuating sense of duty, ill effects may be greatly restrained: but we doubt not, they must always be felt, either in the diminution of moral vigour altogether, or in the want of a proper balance and due proportion among the affections.

7. The last of the general principles which we proposed to state, respects the disinterestedness of the affections: and here we must enlarge at some length. Two opposite opinions have long been entertained, and are still often advanced on this subject. Some have maintained, that the human mind, in all its feelings and promptings to action, is influenced by selfish motives; that, in fact, there is no action or feeling which can be called disinterested. Others have, with more success, maintained, that the mind can be, and often is, disinterested; that a person frequently performs an action, tending to the good of others in a greater or less degree, without the remotest reference to himself, with no other motive than a desire to produce the benevolent effect proposed. The degrading system of the former is seldom adopted except by speculative men, who have been led by circumstances, happily not universal, to see merely the dark side of human nature, and to form a more gloomy picture of its selfishness than truth would allow: or by others, who have expected too much, owing to the beautiful speculations of theory; and having been disappointed, by comparing them with their own feelings in many instances, or with the too general conduct of mankind, have thence gone into the unfounded opinion, that all the actions of all men are selfish. But many of those, who are undoubtedly right in the pleasing belief that the affections and motives of men are often characterized by disinterestedness, have greatly erred respecting the nature of it. From attending to its state in their own minds, or the minds of others, where it is habitual and extensive, and forgetting the stages which have led them to this noble eminence, they have considered disinterestedness

as an innate principle of the mind, and represented it as the first step towards worth of character, whereas it is in reality the last. They have, therefore, decked the commencement of virtue in colours which belong only to its completion: and hence two practical ill consequences have followed: some persons have neglected the culture of disinterestedness, both in their own minds and in those of others, from supposing it to be a necessary quality of all virtuous affections; and others have been driven to despair, on comparing the representations of theory with the faulty state of their own minds, supposing that they could never attain to what they see spoken of as alone deserving the appellation of real worth of character. The more correct views undoubtedly are, that disinterestedness is the last stage of an affection; that it may be hastened or retarded by attention or neglect, as to the culture of that affection; and that disinterestedness, as the general character of the mind, is the highest point of excellence, and what should be our object; but it can only be acquired by a long course of moral (including religious) culture.

Of the progress of an affection, from the state in which the object of it is desired as a means to some supposed good, to that in which it becomes the sole end, the most simple instance, and what is frequently adduced for the purpose, is the love of money; and this serves exceedingly well in connection with the general principles of mental philosophy, and might not be useless in reference to our immediate object: but this will probably be better answered, by taking, for the purpose of illustration, an outline view of the formation of disinterested benevolence.

Every human being receives his first pleasurable impressions in society. His appetites are gratified by the assistance of those around him; and probably there is no agreeable feeling which is not in some way or other associated with those who attend him in the period of infancy and early childhood. Hence arises sociality, or the pleasure derived from the mere company of others; and as the child increases in years, the associated pleasure increases almost continually. In the innocent and generally happy period of childhood, he receives all his enjoyments in the company of others; most of his sports and amusements require a playfellow; and if, by any untoward circumstances, he is prevented from joining his companions, he feels an uneasiness which it is scarcely in his own power to remove, but which vanishes as soon as he can rejoin them. But his happiness derived from others greatly depends upon their happiness. He is happiest when those around him are happy; partly from the contagion of feeling, and partly because his means of happiness considerably depend upon the convenience of others. If his companions are ill, his sources of pleasure are diminished; if his parents are unable to take their customary care of him, he misses it in various ways; he loses the caress of affection, or the little kindnesses of parental tenderness. Hence the comfort and happiness of others necessarily become the object of desire; and even in young children it not unfrequently happens, that this desire becomes sufficiently disinterested to lead them to forego small pleasures, or undergo little inconveniences and privations, with no other view than to increase the comfort of their parents, or to prevent what would diminish it. Benevolence is that affection which leads us to promote the welfare of others to the best of our power; and general benevolence is founded on particular benevolence, for instance, upon benevolence towards parents or other connexions. We have seen its rudiments, and it may be well to pursue it a little farther. The endeavour to promote the comfort or welfare of others is, in the early part of life, almost



almost invariably followed by an increase of pleasurable feelings. Parents approve these endeavours, and they tell their children that their heavenly Father approves of those who try to do others good. Children and young persons are continually feeling and observing the good effects of benevolence, as manifested in their own conduct, or in that of those around them; and hence, in well-disposed children, the pleasurable feelings associated with benevolent actions are very strong; they are very glad to see others made happy, and very glad to be able to make others happy; and the pleasure derived from the approbation of others, and the approbation of their own minds, the increase of good-will in the person benefited, and the expressions of it, the accordance with all the religious feelings which are possessed, and various other circumstances less general, add, together, such a stock of pleasurable feelings to the doing of good to others, that, by degrees, in some or other of its branches, it becomes an object of desire altogether independently of any consideration beyond itself. A person who has completely gone through this process, desires to benefit others without any reference to his own personal benefit in this world, or even in the next: he employs the different opportunities which present themselves to him of doing good to others, without thinking of any thing more than the immediate object. If it call for great exertion on his part, great efforts of self-denial, he brings to his aid the desire of following the dictates of duty, of obeying the commands of God; and where his benevolence, his love of duty, and his love of God, are in a great degree purified from self (and in proportion to such purification), he will forego great pleasures, and endure great pains, without a thought beyond the production of the good which he has in view, and the obedience to the claims of God and duty. Such heights of excellence are seldom attained without a large portion of the discipline of trial and affliction; and imply the suitable improvement of it; but a less and not despicable height is often observed. Benevolence may, with propriety, be termed disinterested, when, in a considerable number of its promptings, it has no end besides the good which it proposes; and in this degree it exists (we doubt not) in great numbers; and by those who have advanced thus far, that improvement may without much difficulty be made, by cultivating a general love of duty, and a regard to the will of God, which would refuse, beyond the possibility of all rational controversy, the opinion that the human mind is radically and universally selfish.

There are few points in moral investigations more interesting, or of greater practical value, than the tendency to love and to desire to promote objects which have no immediate connection with our own good, without any reference to our own good. That the human mind is capable of gross selfishness, which defies all present discipline to correct, is a fact which cannot be denied, and which should excite our vigilance and concern in the work of self-culture as well as in the business of education. But it is no less a fact, that it is also capable of disinterestedness which shall run through the whole of the conduct, and prompt uniformly and steadily to the promotion of others' welfare. The earliest pleasures are personal; we wish not to call them selfish, because that term seems to be generally appropriated to those feelings which not only have a direct explicit reference to our own real or imaginary good, but also prompt to the pursuit of this, to the neglect or injury of others. In this sense the mind cannot, with any propriety, be said to be originally selfish; but its earliest pleasures are personal; and its earliest desires are consequently personal. Its interest in the pleasure of others, arises originally from their connection with

the personal pleasures; and, consequently, the love of others, and the desire of benefiting them, are originally interested; that is, they arise from the dependence of its own personal pleasures on their pleasures. There is nothing criminal in this; it is according to the laws of our mental frame: the mind is criminal only where it rests here, for it cannot without being wrongfully impeded. If the progress goes on as it ought, the desire will be gradually transferred completely from the original end, personal pleasures, to the good of others, the original means; and then this becomes the end, and the desire is disinterested. We may, therefore, with the consistency of truth, indulge a delightful view of the tendencies and capacity of our nature; and hold up as the object of our steady exertions after moral improvement, and as the point for which we should prepare others, and towards which we should direct them, that state of mind, in which to perceive a practicable means of promoting the good of others, and to employ it, will be invariably connected, without any intervening bond of union, without any other motive co-operating but what is as pure as its own benevolence. And the same remarks might be made respecting the love of duty in general.

We may now proceed, as we proposed, to offer some remarks and illustrations founded upon the foregoing principles, which may assist in the practical employment of them in the work of education.

1. We are not to expect that any affections will rise up in the mind, unless those external impressions are made, from which the component feelings are formed. A child cannot form an affection for a parent with whom he has no intercourse of any kind, unless the idea of the absent parent be associated with interesting feelings through the direct efforts of those around him, representing to him the excellencies of his parent, his tenderness towards himself, his desire of promoting his present pleasures and future welfare, his efforts, though at a distance, to do him good, &c.; or through those accidental, but often powerful impressions, in connection with the parental relation, which conversation or books supply, or through the influence of sympathy with the feelings of those about him, who respect and love his parent; or, perhaps, more than all, (if the filial affections have been suitably produced towards the parent with whom he has the intercourse from which they naturally spring,) by the easy transference of them to the absent parent, through the similarity of the circumstances of each. In like manner, it could not reasonably be expected that a child early separated from his family would acquire the fraternal affections, except by similar processes. If, besides having no direct intercourse with his brothers and sisters, he seldom hears them spoken of, has no knowledge of their interesting qualities, &c. those affections will not spring up in his mind. If he possesses some degree of imagination, and has a generally affectionate disposition, a short intercourse with them, aided by the ideas gradually formed respecting his relation to them, may do a great deal to supply the place of habitual intercourse, but without such means he cannot have any habitual fraternal feelings. The same may be said of the affections connected with other relations towards our fellow-creatures, and towards the Supreme Being. At the same time it should be observed, that where the natural temperament is peculiarly suited to the production of lively affections (and we do not hesitate in expressing our conviction that there are very great original diversities in this respect arising from physical constitution), and where the associative power is active, and the perceptions accurate, the affections formed from any one source will be easily transferred to new objects by the influence of similarity in the circumstances and impressions,



of words, of sympathy, &c. And this process takes place more readily in childhood and youth, because the perception of differences is by no means so early acquired, at least so generally exercised, as the perception of similarity; and because, farther, while the imagination is not sufficiently limited by experience, and by the general culture of the judgment, the impressions exciting pleasurable associations, are readily considered as an index of an extensive combination of good qualities, and the affections are at once communicated, when after impressions will tend to check, to limit, and perhaps altogether to remove them.

2. Closely connected with the foregoing remarks, we may observe, that the general affection of love to any object, and the consequent tendencies of the mind, will not be produced in opposition to an excessive degree of painful feelings, through whatever medium derived, if from any links of connection they become associated with the object, especially if it is regarded as the source of them. We have already had occasion to state, that where painful impressions do not exceed a due limit, and do not, from connected ideas, excite those feelings which are allied to hatred (resentment, ill-will, a sense of injustice, &c.), so far from lessening love they tend to give it greater vigour and purity; but where their effects are of that description, or they are in themselves too frequent, or too powerful, in proportion to the pleasurable associations, they must in that proportion check, and perhaps eventually destroy, the affection. If a parent finds privation or punishment necessary for the grand ends of education, and takes care, as far as possible, to let it be perceived that they are employed for those ends only, the dispositions of children must have been ill regulated from the earlier periods, if the employment of them in any degree lessens love. We have seen several instances where affection has assumed its most tender and engaging forms, after the parental infliction of punishment; and what is, perhaps, still more deserving notice, even after the punishment inflicted by a tutor, who, we have observed, has, at the hour of rest, received the most cordial shake of the hand from the boy who, during the day, had been the subject of corporal punishment. Of the modes and regulation of punishments we shall soon have occasion to offer a few remarks; the fact is sufficient to illustrate our present object. But suppose that from any cause the parental relation not only is not associated with pleasurable feelings (in which case, agreeably to the observations in the last paragraph, it will be an object of indifference), but is even associated with the painful ones, arising, justly or otherwise, from an excess (in degree or frequency) of painful impressions, from a sense of injustice, from frequent galling restraints upon the will, &c. it is clear that a parent may become the object of ill-will, and even of hatred. It is a dreadful state when things have proceeded so far; but they do sometimes go on from one stage to another, far beyond the first idea; and seldom then meet with any limit, excepting those derived from a sense of duty. This is sometimes found to excite in the child (especially where aided by the affection of the other parent) a disposition to patient submission, and perhaps to compassion and sorrow, rather than to irritation and displeasure. But when a parent forgets his own duties, or from unhappiness in disposition has not the power to perform them, he ought not to wonder if the tendencies to filial duty (especially those founded on the basis of respect and affection) are not formed in the mind of his child. From various associations a parent will, almost necessarily, feel some love for his offspring, without any intercourse with them; and even in opposition to many painful impressions in connection with them: but in the child there are no such

predisposing associations; and whatever affection is formed in early life, is to be formed by actual impressions in connection with the parent, by the means we have already stated.

These views, while they should lead the parent who is justly solicitous to obtain a high degree of the affections of his children, and at any rate to prevent their indifference or ill-will, to avoid all caprice, undue authority, and excessive rigour and severity in his treatment of them,—while they should lead him to regulate privations and the infliction of pain, by the ends for which alone they ought to be employed, and to make himself the companion and friend of his children, the associate of their little pleasures, and of felt importance to their comforts and enjoyments,—should also induce him steadily to avoid indulging that excessive fondness for self-gratification and self-willfulness, which, if allowed to become habitual to any considerable degree, will assuredly injure the character for life; which must be restrained, if restrained at all, by subsequent pains and privations far exceeding what would in the first instance have kept wilfulness and self-love within their proper limits; and which will, therefore, in all probability, lead to impressions of the most painful nature in connection with the parent, if he endeavour to retrieve the consequences of past indulgence by the only means which will be left him (the pain of which will be heightened by comparison with the past); and which will often produce a similar effect, even if he do not make the attempt, because the more the will is indulged without restraint, the more indulgence it requires, and it is impossible for the parent (however willing he may be to give up every thing for the comfort of a darling child, whom, perhaps, excessive fondness alone has injured) to carry indulgence to the degree which will be requisite for the gratification of ill-regulated desires.

These views also furnish some obvious hints respecting the culture of the fraternal affections. Children necessarily have many pleasures in common, which can be enjoyed without any mutual interference; and these directly tend to make the companions of childhood the objects of complacency and love. But where several children are together, especially where their ages are nearly the same, there are numerous occasions in which they must give up little gratifications in compliance with each other's wishes, numerous cases in which their little pleasures must interfere with each other. If these occurred without a repetition of the associated pleasures, especially when countenanced by a general selfishness of character, they must soon destroy fraternal affection. When they are not too impressive, or too frequent, they contribute to the formation of the habits of self-denial, in a degree which is scarcely effectible in solitary education, because there are, in such cases, comparatively few occasions in which these habits can be brought naturally into exercise; but beyond the limits to which no lasting injury is done to mutual affection, it should be the care of parents on no account to permit such trials to extend. They should avoid all unnecessary causes of contention; they should employ the nicest equity in settling the little contending claims; and they should occasionally connect, with absolute quarrelling, the painful feelings arising from separation, and the suspension of their mutual pleasures. In such cases, however, the separation must be made at least irksome and disgraceful; so that the unpleasant feelings attending it may be greater, or at least more impressive, than those which caused their separation. We need scarcely revert to the principle already referred to under the culture of the filial affections, that parents should most carefully avoid exciting envy and jealousy among their children by their own expressions of partiality.



tiality. Nothing more decidedly tends to check the growth of mutual affection among children than this; and till affection has acquired habitual vigour, and is supported by good sense, and a sense of duty, it can seldom stand against such impressions.

3. In order to cultivate any affection, while itself is in its early stages, and in the early stages of the moral progress in general, we shall often find it advantageous to associate with the exercise of it, supplies of such pleasurable feelings from foreign sources of sensation and imagination, as will blend themselves with the appropriate pleasures of the affection, and by increasing them assist to increase its vigour, and the tendency to exercise it. In the later periods of the moral progress, if there is a tolerable degree of sensibility, and a healthy state of the system generally, the mental feelings will usually be found sufficiently vigorous to supply the place of direct sensation; though, even then, where sensations (as is commonly the case if the mind has gone through its usual culture) are connected with mental feelings, so as to become the index of them, they are powerful means of transferring those feelings to objects not immediately belonging to them. But in the earliest periods, the eye, the ear, and the taste, may be made to contribute materials for the most valuable and most highly refined affections; and may be employed in connection with a greater or less degree of the pleasures of imagination, as circumstances permit or direct. Agreeably to these ideas, the parent who is desirous of cultivating the affections which respect the Supreme Being, will act wisely and beneficially in, occasionally at least, associating with the ideas of him, the pleasures derived by the young mind from the beauties of nature, the music of the birds, and any other innocent source of sensible gratification; and this will of course be doubly effectual, if the association can be accompanied with a direct reference to him as the cause of these pleasures, provided the mind is capable of perceiving the connection, both by its progress in cultivation, and by attention at the time. We are, for similar reasons, among those who are desirous that the pleasurable feelings derived from simple solemn harmony (whether vocal or instrumental), should be associated with the thoughts and emotions excited by the hymn of gratitude, love, and confidence. Among the young and uncultivated, the effect is clearly and decidedly beneficial; and to those of more refined affections, it will serve to introduce and keep up pleasurable states of the mind, and often, by the influence of our associated nature, to excite those devotional feelings with which they have been long connected. Care must of course be taken, that the music employed with devotional expressions, be not of such a nature as to call off the attention of the mind from the import of the words employed; and still more that the use of it do not degenerate into the mere gratifications of musical taste: but we doubt not, that, under suitable regulations, the direct and natural effect of music, in cases to which we refer, is to assist in generating or cultivating the devotional affections, and to aid their exercise. Though affections will seldom be vigorous which have had no painful impressions mixed with them, and never unless they are made actuating motives of conduct, yet it must be our aim to supply them with a sufficient stock of pleasurable impressions in order to keep up their life and power. The exercise of useful habits should commonly be associated with pleasure: they should be called into exercise when the mind is alive to enjoyment: and it is a simple, but most important principle, that whatever disposition or habitual tendency is suitably exercised when a child is cheerful and active, and receiving pleasurable impressions from external objects, it will receive some addition to its pleasures and

strength, from the foreign associations communicated by the feelings and impressions of the time. Whenever, therefore, a habit, which we think important, is at its commencement irksome, if not painful, foreign pleasures (sometimes even those of mere sensation) may be advantageously made use of to lessen the tendency of the mind to exercise it, or at least submit to it with comfort. If it be thought necessary, for instance, to suspend, in a great measure, the amusing employments and sports of children, on the Lord's day, with a view to the future rather than the present, in addition to rational sources of moral and religious interest of various kinds, which may be reserved for that day, we see no objection to employ little extraordinary indulgences of sensation and sociality to assist in rendering it pleasant. Pleasant, if possible, it should always be made; for religion and religious duties should never be viewed with gloom; and the little simple gratifications of the taste, &c. which we would recommend to be given on that day, however little direct alliance they may have with its employments, will contribute to make them pleasant by association, and will do no harm among the young, when habit, and the perception of their importance, and their accordance with the increasing biases of the mind, require no such aid to make them interesting. That which is pleasant as a means of pleasure, will gradually become pleasant of itself.

4. Though in the earliest stages of an affection, it should not be too much or too frequently called into exercise, in opposition to the feelings of privation, or others more directly painful, yet to give it vigour as an actuating motive, it must be exercised in proportion to its strength and purity, in ways which call for self-denial and active exertion. A few observations respecting the cultivation of charity towards the poor may afford some illustrations of this remark among others. If the first acts of charity be made painful, by requiring privations beyond the power of the habit of self-restraint to render them pleasant, it is not to be expected, that, while the impression of that circumstance continues, the desire of doing good will be lively or even pleasurable. Supposing that the parent obviously sympathises with the distresses of the poor, and in various ways is endeavouring to relieve or prevent them, by exertions and benevolent plans, as well as, if the opportunity and means allow, by pecuniary aid, it is probable that from mere sympathy, the tendency to active compassion will be produced in the mind. We have known a child before she could speak, take an obvious pleasure in dropping the little gift of charity into the poor old man's hat. The early exertions of it should be cherished, by exciting pity and a desire to relieve the want which is experienced, through the means of the observation and imagination, and by shewing what effect our efforts will have to relieve it, and by associating pleasant feelings (either directly, or, which is much better, indirectly) with the endeavour to do good, making it accompanied with, if not actually productive of, a pleasurable state of mind. Carrying the gift of charity to the poor applicant should be made a gratification, and only allowed where there is a claim upon such gratification from right conduct, or, at least, should be refused, where, from any cause, parental disapprobation has been excited. Children who have habitually been taught to consider the comforts of others as a source of gratification to themselves, will early take pleasure in making little sacrifices to relieve the distresses of the poor. We have known a child, three years and a half old, prefer a baby-house of cut paper to a rocking-horse, which had been the object of her wishes, "because it cost nothing, and mamma would have the more money to give to the poor." By degrees, when the pleasure



ture of charity is become pretty lively, and the habit of acting upon it is tolerably confirmed, it will be desirable to lead to more decided endeavours to relieve the poor, *e.g.* the little sempstresses may be allowed a small gratuity for her work, when done properly, and she may be led, without any thing like constraint, to give her earnings to the poor; the pleasure of doing which we have seen very strongly indicated in a child of between five and six years old. Children whose wants have been limited and properly supplied, and whose desires have been tolerably well regulated, will seldom feel the value of money to themselves, and to give away a mere gift, will little call for the exercise of self-denial; but at any rate it will be found advantageous to allow them to make necessary articles of dress, and to give the produce of their industry to the poor. We believe that the thanks of the poor never gave any one more unaffected delight, than they have done to the child before referred to, when, without the excitement of praise, or even the reward of sympathy, (expressed in words at least,) from those whom she best loves, she has given away the produce of her labours. This pleasure also should be associated with good conduct, and permitted only where the behaviour has not been unsatisfactory; and after a benevolent action, the pleasurable state of the mind should be encouraged both by the consequences naturally following right conduct, and, in extraordinary cases, by communicating little simple gratifications, which, even without an explicit connection, will serve to associate pleasure with this branch of duty. With respect to boys, it will be less easy to call their charitable feelings into exercise in this manner; but the parent who is desirous to cultivate them in the only effectual way, by active pleasurable exertion, and by little privations proportioned to the degree of their rigour, and such as can be easily overbalanced, if necessary, by pleasurable feelings drawn from different sources, will seldom be unable to find suitable means and opportunities of doing so. When they are arrived at the age at which allowances of pocket-money are given them, if their minds have been rightly directed by example, by occasional exercise, by instructions, &c. they will often be easily led to employ some of their little superfluities in acts of benevolence; and if these are judiciously brought about, and directed to objects, the importance of which is obvious, and if they be associated with pleasurable feelings (in suitable proportions to the moral progress of the individual, and to the power of self-denial), derived from little rational gratifications from the satisfaction of parents, and (if in a case somewhat peculiar, and requiring considerable stimulus) from the approbation of conscience, and the more direct religious considerations, all will contribute permanently to the liveliness and vigour of the principle of benevolence. To shew what we mean by pleasurable associations from external circumstances, we may take the case where a parent, or tutor, after his boys have been contributing pretty largely from their *limited* allowances, to promote the interests of an important institution for the benefit of the poor, associates with the act of benevolence the pleasure they derive from a long wished-for walk on a fine bracing morning, by saying to them, "I hope, my boys, you will enjoy your walk; you have been doing what will be beneficial to others; and the pleasure of doing good, and the pleasure of your excursions, will increase each other."

The education of the poor presents the young with a noble field for the culture of benevolence; and the prevalence of charity-schools in general, and especially of Sunday-schools in particular, affords to most young persons an opportunity of engaging in it. If they are steadily employed

in the communication of useful knowledge, and particularly of religious knowledge, under the guidance and with the assistance of the greater experience of their friends, it will render their own knowledge more correct and practical, it will lead them to think more themselves on subjects of religious duty, and will make the welfare of others an object of solicitude and exertion. The young should be early accustomed to consider the education of the poor as an object of delight, of wisdom, and of duty; and should be encouraged to contribute their efforts towards it, with a view to their own moral improvement, as well as to the benefit of their services in the cause of benevolence.

5. We must endeavour to adapt our means of moral culture to the general character of the mind, whether arising from physical temperament, or from the actual progress made in the acquisition and cultivation of the different moral dispositions and habits. In doing this, though we shall often find it advantageous to avail ourselves of the power over the mind which those dispositions and habits present, even when in their present state they ought not to be permanent, yet (especially in the more advanced periods of education) we ought peculiarly to endeavour to supply their defects, to curb their excrescences, and to strengthen their right tendencies. And when we think it expedient to employ, in the way of motive, those dispositions and habits which eventually must be modified or greatly restrained, we must be careful that we do not give them too much power in the mind, to the permanent injury of the moral character, and of the individual's happiness. We are strongly impressed with the importance of this last remark, in connection with the sense of ridicule, which so often furnishes to the thoughtless and dissipated, the means of confounding moral distinctions, of weakening the influence of parental authority, of rendering the peculiarities of religious profession irksome, if not absolutely painful, and by degrees destroying the impression and perhaps the belief of the grand principles of religion, which had been early instilled, and long cultivated (and even judiciously cultivated), and employed as the motives of action. That the mind will be exposed to such influence in intercourse with the world, should induce us to avoid, in the early periods of education, communicating principles of morals and religion, the grounds of which do not appear to ourselves fully satisfactory, and forming unnecessary connections of those we do communicate, with peculiarities in manners, dress, &c.: it should induce us, as the progress of the mind will permit, to shew the reasonableness and foundation of those principles, and while we point out their importance and mutual relations, to confine the fundamental principles of belief and practice, within as narrow limits as possible, and to make our conclusions from them appear as inferences, the incorrectness of which will not affect the truth of those fundamental principles; in short, to cultivate the understanding while we are cultivating the affections, to habituate to discrimination and to sound reasoning, and to give habitual influence to higher motives of action; but at the same time it powerfully urges us to avoid giving undue strength to the sense of ridicule, by employing it too frequently and unnecessarily as a motive; by making it too much felt, and consequently too much feared; by connecting it with serious expressions of displeasure, &c.;—to cultivate that firmness of mind, which, if it do not directly lessen the dread of it, will do so, indirectly, by lessening its influence as a motive;—to accustom the mind to appreciate the justness of expressions of ridicule;—and to make any instance of firmness in opposition to them, for the sake of adherence to any principle of filial obedience, truth, uprightness, &c. a ground of peculiar approbation, and, on the



## MORAL EDUCATION.

the contrary, any instance of submission to it, in opposition to such principles, the subject of pity, of disapprobation, and, if the case requires it, even of contempt. The influence of ridicule operates through the sense of honour and shame, and it may sometimes therefore be expedient, though the less the better, to curb it through the same channel.

We are fully aware, that there are cases, (particularly where serious displeasure or actual punishment is out of the question,) in which the influence of ridicule may be beneficially employed; that sometimes, where the education of the affections has not been properly or successfully conducted, it must be employed, because no other motives will answer the purpose so effectually and beneficially; and that there are individuals in whom it is even desirable to awaken a feeling of ridicule. And it may sometimes happen, that to prevent exposure to ill-natured ridicule, where its influence would be excessive and injurious, it should be employed with a sparing hand and a clear separation from all malevolent motives; *e. g.* in connection with little awkwardnesses of gesture and modes of expression. But where the susceptibility of its influence is the most lively, where the general susceptibility of the mind is great, and the sense of honour and shame at least very powerful, if not excessive, there it should be our endeavour to lessen its influence, and to turn the current of those feelings into a beneficial channel, by directing them as much as possible from those little qualities which are not essential to true worth, intellectual or moral, towards the higher excellencies, and by refining those motives themselves through the purifying influence of religious principles.

The power of ridicule obviously depends very greatly upon the degree in which the feelings of honour and shame exist in the mind. If our limits would permit, we should be desirous of entering pretty fully into the consideration of the formation of these feelings, and the proper regulation of them in education: but we must content ourselves with recommending a few general observations; and to those who wish to enter further into the subject, we strongly recommend the perusal of the 95th proposition in the first volume of Hartley's *Observations on Man*, and propositions 62, 63, 64, in his *Rule of Life*, which will probably lead them to most of the conclusions upon which we should wish to enlarge. In Miss Edgeworth's chapter on *Vanity, Pride, and Ambition*, they will also find many important remarks, which, in various periods of education, and in various circumstances, cannot fail to be highly serviceable in moral and even intellectual culture. And we may take this opportunity also of recommending to our readers, the truly excellent observations which they will find in *Practical Education*, in the chapters on *Temper, Truth, Rewards and Punishments, Sympathy and Sensibility, Female Accomplishments, Prudence and Economy*. These chapters contain a fund of the most valuable instruction and aid, in giving that regulation of the conduct and dispositions, to which we are directed by enlightened prudence, and a sense of duty founded upon it. If the moral system which is displayed in her portion of *Practical Education*, and in her other writings, had decidedly presented, with its present excellencies, those higher and more ennobling principles of action, to which the soundest views of human nature, as well as the morality of the gospel direct, our wants would then have been completely supplied. We do not wish that she should class herself among the "Sectary-metaphysicians," (See *Pract. Ed.* ch. xxv.); her own independence of mind, and accurate judgment, must have kept her in the eclectic sect of philosophers; but we do most earnestly wish, that while she made the principle of association in one of its leading

operations the basis of her system of education, she had also followed out another of its grand laws, in its connections and consequences. Hartley has unhappily encumbered his doctrine of association with the theory of vibrations; and he treads upon difficult grounds, with respect to the generalization of the intellectual powers of the mind; but in all that respects the affections, and the mental pleasures and pains in general, their growth and culture, their regulation and refinement, we do not hesitate to express our opinion that his observations are to be regarded as the *Principia* of moral philosophy.—If the principles of his *Rule of Life*, (divested, we would admit, of whatever is not clearly supported by his philosophical principles,) had furnished the foundation of that morality which is so admirably taught in the *Parent's Assistant, Moral and Popular Tales, &c.* without introducing these views so as to disgust those who cannot feel their force, they might have been made powerfully to contribute (almost without being perceived by any but such as had also imbibed them) to the cultivation of them in better soil, and to prepare for such cultivation beyond present calculation.

But to proceed. By pride we understand, an unjust feeling of superiority over others, or of elevation in the scale by which the individual estimates honour; by vanity, an excessive desire of the praise or good opinion of others. The former indicates an unfounded opinion as to the title to honour; the latter is generally accompanied with some opinion of that kind, but does not necessarily imply more than an eager desire of honour.

It is difficult to form a comparative estimate of the injurious effects of pride and vanity. When the soil is good, both may produce good fruit; perhaps, however, pride presents the most effectual obstacles to improvement, and vanity tends most to render that improvement ineffectual. In the early periods of life, the good opinion of others is, in most cases, the highest stimulus which the mind can receive; and well directed, it has its full effect in prompting to the attainment of moral and mental excellence. The circle at first is narrow: the few friends on whom we depend for the various comforts and enjoyments of life, are those whose good opinion forms our first object. If these are correct in their appreciation of worth, their good opinion is the source of future excellence; it prompts to the formation of the most valuable habits; and lays the foundation for that desire of honour, which afterwards raises the mind to him whose approbation is happiness. If they make their approbation depend upon right conduct, and do not lavish their praise or their censure, but give it only where, justly estimated, praise or censure is due, the result is valuable: if they teach to value the praise of the wise and good only, vanity will, in time, be brought within proper limits: but they do not do all, if they do not teach, that the pleasure which they at present receive from the approbation of their friends, is afterwards to be chiefly sought for, in that of their best friend; that his approbation is to be made the criterion of excellence; and that by this they must appreciate the worth of all other sources of honour. If indiscriminate vanity be not thus checked, the mind which seeks the good opinion of others, will fall into the opinions and practices of others; and unsteadiness of principle and of conduct must be expected, for that on which they are founded is as variable as the mind. The stimulus of praise becomes necessary to happiness: and the mind is incapable of exertion where that praise is not to be obtained; is incapable of acting in opposition to the opinion of those whose censures it deems among the worst of evils, whose praise it regards as an important good. The excessive desire of the



the good opinion even of the wife and good, is injurious to the mind. It enervates its powers of action, it renders it fickle and inconstant: it prevents from efforts leading to high utility, where those efforts may be misinterpreted; it checks the attention which should be paid to superior honour; and it prevents that ardent desire for the highest approbation, which should be made, as far as possible, the primary object of pursuit.

The workings of vanity ought not, however, to be viewed with too suspicious an eye in the early stages of intellectual and moral culture. Self-diffidence is almost necessary for that culture; and vanity is frequently the offspring of self-diffidence. But great care should be taken to prevent the love of praise from becoming a necessary stimulus to exertion. The stimulus should be lessened by degrees; and, if done gradually, the habit which it was intended to generate will be formed, and the exercise of it continued, without this stimulus. Praise is probably employed in education more than is desirable, because more than is necessary: perhaps the simple expressions of sympathy, in successful exertions, would commonly answer every purpose. The employment of these means must, however, be varied by circumstances; but it should always be kept in view, that praise should be little employed in the cultivation of moral worth; to that, approbation should be given indirectly; and when bestowed upon intellectual acquirements, it should be distinctly seen that these are not held in the same rank with the performance of duty. The young should frequently be led, if self-diffidence do not make this a bar to exertion, to contemplate those who have made greater attainments than themselves, and seldom refer to those who are below them. In this, however, such cases should be adduced as will prevent, or rather avoid, the excitement of envy; and where emulation gives birth to envy, this should be carefully avoided. But, above all, they should be taught to be discriminate in their desire of approbation, and be led by degrees to seek for that approbation which alone is certain, and which alone is independently valuable. The eager desire of the praise of men debases the motives, weakens the mental powers, and produces corroding inquietude: the ardent pursuit of the divine approbation will supply motives to action continually increasing in purity, will strengthen the mind for valuable exertion, and prepare it for permanent happiness.

6. In order to prevent the rise, or check the growth of any disposition, which we conceive to be injurious to the individual, we must avoid the original expressions tending to give birth to it, and to lead to the recurrence of its excitement; and we must aim to produce suitable associations of a painful nature with its exercise. The more our plans are directed for the prevention of wrong dispositions and habits the better; and the same must be said where they can be properly restrained, by simply avoiding their excitement. Still, however, cases must occur, in which the correction of them must be brought about through the medium of bodily and mental pain; and the great point is, so to proportion the degree of punishment, and to regulate the manner of it, that it shall not exceed the necessity of the circumstances, and that it bring into exercise no other wrong feelings.

Disgrace, privation, restraints upon liberty, and corporal pain, all of which probably may, in different circumstances, be employed with advantage, have all their peculiar inconveniences and ill consequences. The fear of shame is a most powerful motive to action, and indeed not uncommonly more powerful than the desire of praise; and it is of great consequence that this feeling should exist in the mind with a tolerable degree of vigour; since it is a very important

auxiliary of the moral principle, and will sometimes serve to supply its deficiencies: but if it be too much employed, it loses its sensibility, or becomes perverted, or else it acquires an excessive degree of power, and makes the conduct and happiness of life so much dependent upon the opinion of others, as to render these exceedingly unsteady. The fear of shame constitutes an essential ingredient, in what is commonly termed a regard to character; and among the lower classes of society it should be encouraged, we had almost said, without limit, because there are so many causes continually operating among them, particularly in the present periods of difficulty and distress, to reduce it within narrow limits, or to destroy it altogether; and the want of it is, in all cases, greatly to be regretted. Like most other valuable principles, however, it is liable to great abuse, and to an injurious direction: and it is greatly to be feared, that in the usual systems of public education it is thus abused; since, from the prevalent modes of punishment, it is less excited by what ought certainly to be the chief source of it, the having merited punishment, and being in consequence exposed to it, than by the want of fortitude in bearing it. When disgrace is employed, it should be associated only with conduct which is really disgraceful; and it should be proportioned to the degree of impropriety or baseness observed: and we should be peculiarly careful that we do not deaden the fear of it, by exciting it too frequently, or on occasions in which it is merely facitious. If a parent is continually making trifles the subject of disgrace, the sense of shame must either become excessively inordinate in its influence, or children will lose it altogether; both which effects are earnestly to be deprecated.

Respecting little privations of personal gratification, there is always some danger, lest those gratifications should acquire an undue degree of importance, by being made the means of punishment; and we conceive they should not be employed for this purpose in cases decidedly immoral. But in connection with a want of industry, we see no adequate objection to the occasional diminution of the pleasures of the taste. The health, of course, must be taken care of; but it is a clear maxim of retributive justice, "if any one will not work, neither let him eat." This is often actually carried into effect, by a natural connection in real life; and we are satisfied that it may be advantageously employed, by an artificial connection, in education. When, from any cause, a considerable degree of parental displeasure is manifested, it will sometimes be found desirable, if the painful feelings directly arising from it do not seem sufficiently lively to suspend those little simple pleasures of the palate which extend beyond the absolute wants of nature: indeed, as long as a child is under a parent's displeasure, there should be as few gratifications as possible to look to for relief; and if the uneasiness which it produces is not itself sufficient to make the usual pleasures of childhood insipid, it is desirable to increase that uneasiness by facitious associations. A parent's displeasure should always be felt to be a serious evil.

Solitude, confinement, and other kinds of restraint, may all, in appropriate circumstances, be employed with effect; but there are some dispositions upon which they operate very injuriously. Some children, when under such punishments, not having the usual external impressions to change the current of thought, seem to employ their leisure in the exercise of bad dispositions. Where this is the case, no benefit can accrue from them, and much injury must. Then, again, in some instances, they afford too much opportunity for the play of the imagination. But the expectation of the loss of play, as a recompence for the want of diligence



gence at business, is often a pretty powerful, and it is a natural stimulus; and not unfrequently there are instances in which it is beneficial to employ solitude (provided it be not too long continued), as a means of leading to reflection on improprieties of conduct.

Respecting corporal pain, we have no hesitation in saying that experience has compelled us to give up our theories against it. We are now satisfied that there are dispositions which are much less injured by this kind of punishment, than by any other which would be effectual. And we are further convinced, that in the earliest periods of childhood, before the time when the mind can be properly influenced by moral motives, corporal pain, sparingly but firmly administered, will often be of much more service, and do much less harm, than any other species of punishment. If this be employed at that early period, to overcome the rudiments of obstinate disobedience (which is the only case in which we have occasion to perceive its expediency), it will save a great deal of punishment of a different description in the later periods of education. Perhaps, if parents were able to undertake the sole management of the education of infancy, it might justly be attributed to themselves, if such punishment were ever necessary; but, as circumstances usually are, a great part of the work of education consists in endeavouring to destroy dispositions and associations which the ignorance or carelessness of others have produced. We are not disposed to think that falsehood, selfish injustice, &c. should in childhood be made the ground of corporal punishment; these will, in general, be better punished by their natural consequences, which may even then be brought into view. But where habits of this decidedly immoral nature have been suffered to gain great strength, and have been carried on to the period of early youth; where the sense of shame has scarcely any power, and the natural inconveniences of those habits may be comparatively easily avoided; there (and also in cases of careless perverse disobedience) the rudiments of moral discipline and feeling may, we think, be advantageously begun by severe corporal punishment. We have known such cases; and experience has led to our conclusion. When such means are resorted to, it would be cruelty to employ them slightly. They should be regulated in such a way as to afford the individual no support from sympathy, and yet be impressive to others. And their whole accompaniments should give them a real importance in the estimation of all concerned.

But whatever be the punishments employed, it will be of great advantage that the following principles be distinctly kept in view. 1. Punishment should, as much as possible, be appropriate to the offence, in kind and still more in degree. If it can be made to resemble the natural consequences of ill conduct, it will have double influence in real life. If it have its due proportion, it will be less likely to excite the sense of injustice, and will contribute to the correctness of the conscience. 2. Punishment should be certain when appointed. There may be circumstances in which it would be injustice to punish; and if these clearly authorize the remission of the punishment, it may be attended with more benefit to remit than to inflict. But such cases can be but rare, where the declaration of consequences does not arise from the hasty ebullitions of passion. 3. The disposition should be carefully studied, and those means employed which best suit it; which are most likely to check wrong habits and dispositions, without implanting others in their stead. 4. Punishment should always be guided by the only justifiable ground of it, the moral benefit of the individual, and of those within the influence of his example and of his punishment; and, as much as possible (especially

in the most painful exercises of punishment), it should be *obvious* that it springs from the desire to do good. It may sometimes lose a little of its immediate efficacy; it may excite less terror than if the result of passion; but while the infliction of pain (we particularly refer to corporal punishment) is accompanied with earnestness, it should clearly appear that it is the result of the same benevolent determination with which the feeling surgeon amputates a limb to save the life of his patient.

Punishment, if it operate beneficially, does so in two ways; by producing actual painful associations in connection with the dispositions or habits, thus diminishing the tendency to exert them; and by exciting the fears with respect to the future. The former is the best possible effect; and the latter, to a certain extent, cannot but be beneficial. The principle of fear, where not excessive, and where properly regulated, is of the utmost consequence, in connection both with the general conduct of life and with personal safety. But where it is excessive, it degenerates into cowardice on the one hand, and superstition in its various forms on the other. From the former springs a host of moral evils: where fortitude does not constitute, in some tolerable degree, a part of the character, enabling the mind to support not merely bodily but mental pain, and to remain firm in the course of duty, without being too powerfully affected by the apprehensions of imagination, or by actual suffering, there can be no stability of character; it must be weak and wavering, the sport of fools, and, what is worse, the sport of the wicked and designing. From the latter originate all the degrading views of the Supreme Being, and of religion in general, which contribute to fill the mind with a thousand imaginary terrors which often destroy the influence of real religious principle in the individual himself, and render religion disreputable in the eyes of others. In childhood, excessive timidity of character (whether arising from constitutional tendencies or early associations), should be carefully guarded against; it is the parent of meanness and falsehood; and in every period of education we ought to be extremely cautious, lest our punishments should operate to the weakening of the mind, instead of the supplying it with vigorous motives to avoid what is wrong. Fear should be associated with the idea of doing wrong, rather than with the consequences of it, and still more rather than with painful feelings not springing from ill conduct. The fortitude arising from constitution and the early care of parents is valuable, that of principle is invaluable. On the regulation of the principle of fear, we refer our readers, with great satisfaction, to the third letter in Miss Hamilton's first volume. The whole work does credit to the author's understanding and to her heart.

7. Since the affections and desires may indisputably be excited, not only by impressions of actual sensation, but through the operation of the memory and the imagination, it is of the utmost consequence to the purity of the mind, and to the due restraints upon the sensual desires, that care be taken, from early years, to preserve the mind from all impressions calculated to give a premature rise, and excessive strength to those desires. In connection with this point, we beg leave, for the present, to refer our readers to some extremely important considerations (the matter of which will, to the judicious mind, compensate for some little peculiarities in the manner), contained at the close of prop. 53, in Hartley's Rule of Life.

8. As the progress to disinterestedness must always be gradual, and in many cases must be slow, we are not to expect too much, in this respect, from our children, nor too much disapprove the indications of attention to personal pleasures.



## MORAL EDUCATION.

pleasures, provided it appear to be only in the natural progress of the mind. We may make our children hypocrites; but we cannot all at once make them disinterested. We may lead them to conceal their motives, or even to profess what do not actuate them; but we cannot thus communicate that purity and refinement which, by the fully established laws of the mind, are the result only of long continued processes, often advancing without our aid, but not unfrequently to be greatly assisted, partly by fostering and exercising right dispositions, and not less by checking counteracting associations. It should never be forgotten that steady habitual disinterestedness is the last stage of an affection.

Some may, however, suppose that children are usually more disinterested than persons who have had experience in life; and it may contribute materially to our leading object, if we add a few remarks on that point.

Children often appear disinterested when they really are not so, because we do not sufficiently take into account the quick changes of their feelings; sometimes setting a light value upon what a few hours or even minutes before they were extremely pleased with; and at other times the reverse. Hence they are readily induced to give away what they have before been delighted with; and to make what we erroneously think sacrifices, without an effort. But again, we are apt to think them disinterested, when they give up what they really like, only, or principally, because they thus have a greater share of the pleasure resulting from their obedience to their friends,—praise or other rewards. Now, the approbation of their friends is, to well-disposed children, of such great value, that praise affords them some of their highest gratifications. And, therefore, when, for the sake of that approbation, they give up play-things, or any other objects of pleasure, &c. so far from being disinterested, they are eminently self-interested: but their self-interestedness is of a much more refined and superior description than that which would prevent the little sacrifice; one which, with due care, will prove a most powerful engine in the moral and religious culture of the mind, by increasing the influence of the parent and instructor. Again, children are usually influenced more by present than by future objects, however far superior these may be in their value and durability. Few children early attain such command over themselves, as voluntarily to give up a present source of pleasure for a future one: and where it is done, it is rather in compliance with the wishes and injunctions of their friends, than from any comprehensive conception of the future good. It is an excellent thing to obtain the sacrifice by means of any worthy feeling: all we wish to observe is, that children do not feel the real value of future pleasures, and therefore easily yield to that which is most powerful at the time. Hence, therefore, they appear disinterested, because they cannot properly calculate the value of the good which they relinquish, and do in reality prefer the greatest present pleasure; or rather they are actuated by the greatest present pleasure.

We do, however, cheerfully admit, that some children very often are, in some sense, disinterested; for instance, will obey their parents, will tell the truth, will endeavour to increase the comforts of others, without any reference, direct or indirect, to any personal gratification: and we also admit that these same children too frequently, as they grow up, become more selfish; and that sometimes the constitutional sensibility, through which (among other causes) they have in some instances become disinterested, proves the cause, under improper regulation, of their becoming selfish, and that to a degree which those of less promise never manifest. But those marks of disinterestedness

are by no means difficult to be accounted for. The habit of obedience, for instance, is the constant object of a parent's care and exertions; and in a well educated child there are no strongly opposing dispositions to be checked before obedience can be secured. Little pains are quickly forgotten, though their effects remain; future pleasures are thought of but little, and the value of their sacrifice not falsely estimated; the constant connection is formed between pleasurable feelings and obedience, and unpleasant feelings and disobedience; above all, obedience, prompt and cheerful obedience, is early and steadily cultivated, so as to produce a regular habitual tendency to it: and as soon as a child acts solely from the impulse of an habitual disposition, he is so far disinterested. But this disinterestedness is not to be relied on as a settled principle; steady habitual disinterestedness of any worthy affection can scarcely be produced till the affection has been exposed to the influence of opposing impressions, and till the mind has gone through much moral discipline.

9. In order to produce disinterestedness as an habitual prevailing quality of the mind, while we make the exercise of the disposition sufficiently pleasant, by various means, we must carefully avoid leading the mind to rest upon the pleasures themselves. In the later periods of education, we must associate pleasure with actions, less as positive rewards, than as the results of valuable qualities. We must frequently excite to the exercise of them, without hope of immediate satisfaction, and even in opposition to expected inconveniences, and at the expence of present privations. And we must gradually raise the mind to the higher motives: substituting by degrees for those which are personal, such which are refined and disinterested, and which carry the mind out of itself. The cultivation of the religious affections, and of an habitual sense of religious duty, has a most beneficial effect in elevating the mind towards the heights of disinterestedness. The hopes and fears of religion have themselves a purifying influence; and there is no motive which can have a more direct and powerful tendency, (in proportion to its own strength and consistency,) in giving firmness and purity to the moral principle, than the habitual regard to the will of an omnipresent being, and an habitual desire of his approbation.

10. Much may be done by the proper regulation and communication of external impressions, (operating directly by sensation, and still more through the medium of the associated feelings,) towards the formation, growth, strength, and purity of some dispositions, and towards the prevention, restraint, or eradication of others; yet, throughout, we must be extremely careful so to direct and moderate our efforts, that we do not proceed beyond the natural progress of the mind, that we do not, through fear of their excesses, lay too violent a restraint upon principles of real, though subordinate and temporary value; and that we do not, from a sense of their great importance, too rapidly hasten the growth of others. In short, having from philosophy and experience obtained just views of the nature of the moral principles of the mind, their origin, progress, and termination, we must carefully follow nature. The conscientious parent is sometimes as much in danger of attempting too much, as others are of doing too little. We recollect seeing, some years back, (in one of our most popular periodical publications,) an animated paper, designed to restrain the excessive anxiety of parents, which was attributed by some to the pen of a writer eminently qualified to aid the religious parent in the works of education, and respecting whom our only subject of regret is, that she has not done more,—the author of *Hymns in Prose*. Parental solicitude should always



always be put under the guidance of patience, good sense, and experience, and, if possible, of mental philosophy.

III. *The Moral Sense, or Conscience.*—The conscience is that internal principle, which, without reasoning, without direct reflection on the *consequences* of actions, or even on their *obligation*, at once approves certain dispositions or actions, or course of actions, as right, and as what we ought to cultivate and practise, and at once disapproves of certain dispositions and actions, or course of actions, as wrong, and as what we ought to check and avoid. The human mind is so formed, that such a principle will spring up in it, if the individual is placed in circumstances common to almost every human being. This, universal experience proves; and it is a question of no great importance, though by no means difficult to be decided, whether, if a human being could grow up to maturity, without having from infancy any intercourse with his fellow men, and without any supernatural impressions, he would manifest any such principle. What is of the greatest importance, is, that its dictates are not universally the same, and that it is an improvable principle; that to give it early correctness and vigour, requires great care on the part of those who are concerned in the early periods of education; and that to give it its due sensibility, accuracy, and influence, requires the use of suitable means in every period of life.

If the dictates of the conscience were at all times the same, or it were not an improvable principle, the rules of revelation and all moral culture would be useless. We cannot doubt that the contrary is the case. In the heathen morality, as Hartley observes, taken generally, some of the higher virtues which Christianity points out to our attention and observance, were omitted, and some were even the object of contempt: many enormous vices were permitted; some were even recommended: ambition, of the most selfish kind, was esteemed virtuous; and many kinds and degrees of humanity were treated with reproach and contempt. And, as to the devout affections, they were destitute of love, and their fear was superstition. "The heathen philosophers," says Paley, "though they have advanced fine sayings and sublime precepts in some points of morality, have grossly failed in others;" and he brings forward a series of instances, in justification of his remarks, from among the most eminent and excellent of the ancient philosophers, which are sufficient to shew the inestimable value of the morality of the gospel, as well as to prove the point in question. (See Meadley's interesting and valuable *Life of Paley*, p. 340.) "There is scarcely a vice," he elsewhere observes, "which in some age or country of the world has not been countenanced by public opinion." And what diversity do we perceive at present? Even among those whose minds are cultivated, but not brought under the restraining guidance of religion, we hear murder, under the name of duelling, vindicated, and even applauded; and we find the Christian's forbearance and forgiveness reprobated as meanness and cowardice. How common is it, even where persons are really on the whole influenced by religious principle, to depart, without hesitation, from the strict dictates of Christian integrity or truth, where the end, as they think, is a good one, and such as to justify the means; and in some instances even to approve of direct falsehood and prevarication, where their feelings of benevolence prompt them to endeavour to prevent some supposed inconvenience on the part of others, or to obtain some supposed good for them. Those who have had much experience, and have paid much attention to what passes within them, though they may feel the decisions of their consciences to be generally correct, can scarcely fail to call to mind instances, in which they have

acted under the conviction that their conduct was right, when further reflection and examination have led them to believe the contrary; and those who are not able to retrace instances in which their consciences actually approved of what they afterwards thought wrong, will be able to perceive a progress in the correctness and extent, the readiness and vigour, of the decision of their conscience.

Those who have had much concern in the early education of children, can feel no difficulty in tracing (generally at least) the progress of the moral principle: and correct views as to the laws and operations of the human mind, leave us little room to doubt, that its pleasures and pains are formed, like all other mental pleasures and pains, by the ever active principle of association, connecting, combining, and blending together a vast variety of feelings, more or less complex, so as to form from them a set of feelings, most powerfully influencing the conduct, and contributing most essentially to the happiness or wretchedness of the individual. These feelings are derived from, and consist of, all the other pleasures and pains of our nature, so far as they are consistent with one another, with the frame of our nature, and with the course of the world. (See Hartley, vol. i. prop. 99.) They are continually presenting themselves, urging to shun some branches of conduct, and to pursue others; rewarding us for our obedience with some of our purest and best satisfactions, and punishing us for our neglect and disobedience, with emotions always painful, and sometimes so agonizing, that life loses all its relish, and all the pleasures which have been purchased by slighting its warnings, lose their power to give more than temporary relief. As soon as the moral principle begins to appear, a great variety of impressions, some designedly communicated, and others produced as it were accidentally, begin to connect with the terms *good* and *right* (and others similar to them) pleasing feelings, derived directly from sensation, or from the approbation of friends, &c.; and with the words *wicked*, *wrong*, &c. painful feelings, in like manner derived directly from sensation, or from the feelings of shame. If children have the happiness to have parents, whose ideas respecting duty are generally correct, these feelings will be properly directed; and they will then be increased, strengthened, and rendered more and more lively, by the continual addition of many others, derived from various sources. If not, there will be a proportionable deficiency, or erroneousness, in the dictates of the conscience, which will be to be corrected, if corrected at all, by experience, or by increased knowledge, afforded by the Scriptures, or some other rule of life, respecting duty, and the consequences of performing or neglecting it.

But supposing the generally favourable, and not uncommon case, (where an individual has had the advantage of an early correct direction of his moral feelings,)—here all the pleasures arising from the exercise of the filial affections, all the pains arising, as natural consequences, or as direct punishment, from disobedience, or neglect of parental injunctions, contribute their share to strengthen and enliven these feelings. As soon as some knowledge of God and of a future life has been obtained, the affections which are formed towards God, the hope of future happiness, and the dread of future misery, begin to add to the vigour and extent of the feelings of conscience; and they continually, and through life, contribute those impressions, which powerfully tend to give life, activity, and energy, to its pleasures and pains, while at the same time they correct and confirm its dictates. Separate from this source, though not independent of it, the beneficial tendency of right conduct and disposition, and the injurious tendency of the contrary, with respect to the happiness both of the individual and of others,



in the way of interest, or reputation, or social comfort, whether the result of experience, or observation, or pointed out in a less impressive, yet often effectual way, by the instructions of parents, &c. add to the strength and liveliness of the emotions of approbation and disapprobation.

Though the feelings of the moral sense have a general agreement in their force and direction in different individuals who have enjoyed the usual advantages for the cultivation of the conscience, yet even in them the component parts must be very considerable, both in kind and degree; and without attempting, therefore, to enter into a minute account of the formation of those very complicated feelings, composed, as they are, of a vast variety of other feelings, themselves greatly complicated, it may be sufficient to observe, that every pleasing or painful impression, received in connection with right or wrong conduct, contributes towards the formation or growth of the pleasures and pains of conscience; every instance in which approbation, reward, or any other good consequences, are actually experienced, or are observed to be experienced by others, in consequence of right conduct; every instance in which the mind is led to perceive the beneficial tendency of right conduct, its suitability to the course of providence, and to the frame of man; every instance in which our own right conduct does good, or gives pleasing satisfaction to others, especially to those whom we love; every instance in which the heart is impressed with the conviction, that he who is greater than the heart, knows and approves of sincere and dutiful obedience to his commands; every thoughtful reflection on the infinitely blissful consequences of a course of steady obedience to duty; and every instance in which the present supports of obedience are experienced, or perceived in others,—contributes its share towards the formation and strength of those feelings of love and approbation of what is considered as our duty, which make the contemplation of right actions and dispositions a source of delightful emotion, and which reward the performance of the one and the exercise and culture of the other, by that approving testimony which has often been an abundant recompence for the greatest pains and privations to which duty may direct. And, on the other hand, every instance in which displeasure, shame, punishment, or any other ill consequences, are actually experienced, or are observed to be experienced by others, in consequence of wrong conduct, or in which the mind is led to perceive its injurious tendency, its unsuitableness to the course of providence, and to the frame of man; every instance in which our own wrong conduct does injury, or gives painful regret to others, especially to those whom we love; every instance in which the thoughtful conviction is excited, that he who knoweth every secret of the heart, is displeased with disobedience, and that the consequence of every act of disobedience, of every indulgence of wrong disposition, of every neglect of duty, and the affections enjoined by it, will, in his all righteous ordinations, be followed by its proportionate diminution of happiness, or increase of misery, probably in this life, but certainly in another; every instance in which the present pains of conscience are experienced, or observed in others, in consequence of neglect of its dictates, or disobedience to them,—contributes its share towards the formation and strength of those lively feelings of disapprobation or even abhorrence, with which we contemplate what, in others, is considered as inconsistent with, or contrary to, duty, and of remorse, in consequence of wrong actions and dispositions in ourselves, which punish the performance of the one, and the indulgence of the other, with pains which often exceed in vividness any others to which the human being is exposed in this world, which, though sometimes overcome by the

bustle and pleasures of the world, seldom fail to revive in the period of worldly distress, or in the time of sickness and the apprehension of death, and which will in all probability constitute a great part of the punishment of futurity.

The account which we have given of the nature of the moral principle, affords to those who are concerned in early education, a strong motive to do what they can to give accuracy and extent to their views of duty; to heighten the pleasures and pains of the conscience, so as to bear a due proportion to the degree in which wrong actions are injurious or right ones important; and to lead them, by all the means in their power, by instruction, by praise and censure, by reward, by discipline, and by example, to a constant submission to its decisions. It shews the great importance of beginning early, while the heart is not occupied by the pleasures and cares of the world; while it is free from all prejudice against duty; while its sensibilities are tender; and while impressions in favour of duty may be permanent. Where the moral principle is cultivated early in life, there is something to be effected by the exertions and instructions of others; by the warnings afforded by the course of providence; and by the views of duty and its consequences, afforded by the gospel. Where it has been neglected, no efforts can completely supply the deficiency. The judgment may be enlightened, but the conscience will never then acquire its full strength, its vividness, and its power.

These views, respecting the origin and growth of the feelings of the moral sense, appear sufficient to lead the reflecting parent to all the principles of fundamental importance in the culture of it; and we shall only subjoin a few inferences and additional hints, which may aid a little in the application of them.

1. We must, throughout, proportion our instructions, as well as our intentional impressions, whether pleasurable or painful, to the strength and refinement of the conscience. The principles we communicate, and the pleasures and pains which we employ, should be suited to the general progress of the mind in intellectual culture and refinement of feeling, and to the state of the moral principle in particular. Motives, which at some periods of the moral progress would be most advantageously employed, would be preposterous in others, either absolutely ineffectual, or absolutely injurious.

2. The feelings of honour and shame must be employed with great care, and connected principally, and in due proportion, with right and wrong conduct and dispositions. In employing the former, however, especially in the later periods of education, it should seldom be by the direct expression of praise in connection with particular actions, but by approbation given to similar actions in others, and the like indirect means. Nearly allied to this observation we may remark,

3. That care should be taken so to regulate our modes of expression in conversation, that feelings of approbation or disapprobation should be associated in the minds of our children, in something like a suitable proportion to the value of different qualities or actions.—If children hear us express as much approbation, and in the same terms, of the skill of a gentleman coach-driver, of the abilities of a philosophical lecturer, and of an individual who has just performed an elevated act of disinterested virtue, is it possible that they should not feel great confusion of ideas? if each is termed a *noble fellow*, and with the same emphasis and animation, how can the youthful understanding calculate with sufficient accuracy, to appreciate the import of the expression, in the same way that we should do? We have taken a somewhat peculiar case, but it may serve a little to shew the necessity of attention to the power of words. If the



the influence of association were left out of view, that power must be deemed magical. It is one grand means, (indeed the grand means,) not only in the communication of knowledge, but in the regulation of the desires and affections, and the transfer of them to appropriate objects.

4. We cannot, however, prevent the formation of incorrect associations; and it is of singular importance, that we accustom our children to the utmost openness of disposition, so that we may employ suitable means of correction. The parent, who has acquired the frank confidence of his children, has a means, of incalculable importance, of knowing the erroneous judgments and feelings which they form respecting moral principles, and of gradually correcting them. If sufficient care is taken in the early formation of the moral principles, and, as the mental progress permits, in shewing their foundation, erroneous ones will seldom gain much hold on the mind, unless supported by the affections; and we may sometimes be satisfied to leave them to be corrected by the gradual illumination of the mind and actual experience: but, in general, as error leads on to error, especially if it accord with wrong moral biases, it is better to avoid the causes of error, and as much as we can, (without attempting too much, and thereby eventually defeating our object,) we should destroy the false associations, which may lead to baneful consequences.—If an example be required, of the way in which we would endeavour to effect such separation, we may give one, which may be serviceable in the later periods of education. Suppose the ideas of merit have been attached to that spurious kind of courage, which leads a man to engage in a contest, in which the life of one individual at least, and perhaps the happiness of several, may be sacrificed at the shrine of offended honour;—our aim must be to associate the dreadful consequences of his conduct with the conduct itself; to bring into view the injury to society from the violation of its laws, and the loss of a perhaps useful member; the injury to the connections of the individual, from the cruel breach made in their peace and means of happiness; and the injury to the individual himself, by halting his period of probation with this additional guilt upon his head: even the injury done to the avenger of wounded honour, by cultivating the feelings of resentment, by loosening the restraints of passion, may be added to the mass of evils resulting from the exercise of private revenge. These things frequently brought into view in sufficient detail, as opportunities direct, and events furnish impressive illustration, must gradually weaken, and eventually destroy, the association already formed; must associate demerit, instead of merit, with the conduct of the duellist, and attach the idea of merit strongly to him, who nobly resists the opinion of the world with respect to honour, and declines obedience to the laws, which it imposes, when in opposition to those of conscience and of God.

5. We may here hint at the great importance of care in the selection and employment of books; and in the proper regulation of foreign interference in education, during especially its early periods. We do not object to the occasional employment of works of fiction, calculated to bring into view the application of moral principles; but those principles should be correct. When this is the case, such works often do much to supply the want of experience, and to impress strongly on the mind the effects of right and wrong conduct. Not that the moral should be formally brought into view; children will, in such cases, usually pass over it, to go on with the story; but, if worth any thing, the narrative will of itself communicate the moral. The great point is, that the effects displayed should be natural; so that the expectations, as to the present consequences of

right conduct, may not be raised to a romantic height, or the influence of the narrative destroyed by its obvious improbability. The idea should be forcibly impressed, that the directions of duty must be the primary consideration; its present consequences should be only secondary motives.—Children should have as little to unlearn respecting moral as physical truth; and parents should therefore read, with a parent's eyes, the books which they put into their children's hands. We do not wish, that every thing should be omitted which is not correct and sound in principle; but opportunities should be sought and employed, to lead to discrimination and correction.

6. It is of great importance for the confirmation and correction of moral principles, that the young should be early led to exercise their understandings on them, and to give their opinion, and the grounds of it, on questions of moral conduct, suited to their progress and circumstances. If a proper degree of mental humility have been preserved, so as to leave the heart open to conviction, such an employment cannot fail to be eminently useful, in the corroboration, extension, and correction of the dictates of the conscience.—They should also be led to compare those dictates with fixed rules of duty of general application, and to determine their correctness, on the contrary, by the comparison. The moral sense is greatly benefited by early habits of self-inspection.

7. The passing occurrences of life will often afford us a valuable aid in the impression of moral principles on the mind. In some instances, the effects of right or wrong conduct can be clearly shewn to the young, by actual observation; in others, without naming the individual, the nature and consequences of his departure from duty, may be forcibly brought into view.—These (and similar means) must, however, be employed, only when the understanding is alive to perceive the connection, and when the feelings are not pre-occupied or languid.—Next to them in their effects, and in some instances far beyond them, is the animated detail of the biographer. The class of practical biography (in which of course we include the biographical facts contained in the scriptures) is of eminent value in moral (as well as often in intellectual) education; and the earlier the mind receives a bias to such reading the better. It is one ill effect of the present profusion of "little novels," that they, (like the novels of more advanced periods,) where too freely perused, destroy the zest for sober realities, however well told. We do not class *all* tales under the head just mentioned. Some we have already referred to with general decided approbation, (though in some instances not quite satisfactory respecting the consequences of right conduct); and we will mention another of great interest and value, Saltzman's "Elements of Morality;" a work which admirably fulfils the promise of its title. The plates should never have been omitted; though their effect would not be lessened, if they were reduced a little nearer to modern costume.

8. Biography, when most minute, and therefore most valuable, brings into view the causes and effects of actions in their connections; and this is one great advantage of it. It has another, where it is also faithful, that it prepares the mind to expect, (what not even the cultivation of habitual candour should prevent being brought into view, in real life, on impressive opportunities,) that, in the good, mixed with excellencies, will be found qualities which ought not to be approved and imitated; and among the bad, qualities which tend to render their conduct attractive. The mind, we are again led to observe, should be habituated to distinguish the causes of its approbation and disap-



disapprobation. A sound discriminating judgment is of the utmost service as the basis of moral culture.

9. The habit should be very early begun, of attending to the dictates of the conscience. Children may be early led to think of them, and be guided by them. We have noticed decided indications of great correctness and strength of moral principle in a child of five years old. It was an important direction, which, we are told, a dying mother gave her son, early to learn to say *God no*.—Our rule through life should be to enlighten and obey the conscience; and the rule cannot be acted upon too soon.

10. Though the moral sensibility of the mind should not be allowed to degenerate into frivolous scrupulosity, it should be kept lively, and made extensive in its application. In connection with this principle, we may farther observe, that the mind should not be too much accustomed to actual or fictitious scenes of criminality. Buchanan relates, that the scenes of brutal sensuality and barbarous cruelty, with which the worship of Juggernaut is attended, seem to produce little painful feeling in the minds of the English officers, who reside near the temple of the East Indian Moloch. "They said, they were so accustomed to them, that they thought little of them: they had almost forgotten their first impressions." The vivid feelings of the conscience will, in all probability, be lessened by intercourse with the world; but they should not be worn out before the moral principle, from habitual exercise, has gained power enough to do without them.

11. The fact referred to in the last paragraph is only one instance of the operation of a most important principle, a principle of the most extensive application; that feelings become less vivid by repetition, while habitual motives become more powerful by exercise. Be the habit what it may, the effect of custom is to increase its power. We find it to be the case in those little peculiarities of gesture, of tone, of look, which give the external characteristics to the individual; and still more so, in our mental and moral processes of every kind. Its influence extends to our trains of thought respecting the past and present, to the operations of imagination respecting the future, and to our internal motives and habitual tendencies. Appetite, thought, emotion, passion, desire, affection, and action, are all subject to the same law. With respect to feelings, repetition gradually lessens their vividness. This is the case with the feelings of compassion, for instance, excited by the frequent contemplation of fictitious, or even of real distress. The sensibilities which are designed to excite to benevolent exertion, and which, if thus employed, while they become less ardent, will produce more and more confirmed habits of active benevolence, if they are allowed to spend themselves in mere feeling, lose not only their vividness, but their vigour. They may continue to delude their possessors with the idea that they have really the feelings of compassion, because, from long habit, the tear starts at the tale of woe; but if compared with their former state, they would appear lifeless; and they must be pronounced worthless, because they are unproductive of any efforts or privations for the good of others. It is true, there are, in many instances, means of increasing the causes of feeling, where the same causes would lose their efficacy, at least their impressiveness. The pleasures derived from the discharge of duty, for instance, are all self-consistent, and they spring from such numerous and copious sources, that they increase by employment in stability and vigour, as well as purity; but we think it cannot be denied, that even these lessen in vividness, in the middle and later periods of life. Such indisputably is the general law of our frame. Familiarity with any feeling or impres-

sion renders it less vivid; and the principle leads to an important rule in education, that where it respects important moral views and motives, (which ought to have influence in the mind, but which will be opposed by various external circumstances and internal dispositions,) the one should not be excited, nor the other produced, except when the understanding and affections can be made to receive them, so that they may contribute something towards the formation of the character. Connected with these remarks we must add, as what may be of use, especially in the later periods of education,

12. That the feelings should never be excessively excited. [We are aware that such statements are indefinite; but our object is to lead judicious parents to think on what we regard important principles of the human mind, and to attempt the application of them.] Repeated and strong excitement of feeling is usually followed by inability to derive pleasure even from those external objects, which, if the mind were in its natural state, would readily yield to it; by inability to relish the common comforts of life, or to engage with satisfaction in its common duties; and, indeed, for a time at least, by inability to enjoy again those emotions, which, while they lasted, seemed to raise the mind to the highest pitch of delight. Excessive excitement of feeling, be the object what it may, is always attended with similar effects; and those ought to be most carefully guarded against it, who are most prone to it, whose feelings are lively and imagination strong. It is very apt to make the thoughts and desires centre in personal happiness. There is a virtuous, a religious sensibility; and where this is properly regulated, it conducts to high excellence of character; but there is also a selfish sensibility, acutely alive to every feeling and want which respects itself: there is a morbid, a sickly sensibility, which spends itself in feeling, which seldom produces any valuable exertions, which shrinks from self-denial and privations, which makes even benevolence itself a burden; and this is often originally produced or greatly cultivated by excessive excitement of feeling. Where the sensibility is directed in a religious channel, there is often great necessity for caution. Where the feelings are not employed as the actuating motives to that regulation of the dispositions and the conduct, in which religion really consists, however much they may be made to light up the flames of enthusiastic emotions, of imaginary piety, they will by degrees lose all their real worth, acquire a merely selfish character, and at last sink into a state in which the whole power of religion will be lost. Wherever the parent perceives such tendencies of the mind, as may conduct to these deplorable effects, they should be peculiarly careful to lead their children from the indulgence of feelings which have no direct reference to duty and the welfare of others, and from the excessive indulgence of any; to lead them, as much as possible, to employ these feelings in some useful channel, and to attend to the common concerns and duties of life; and to confine them, (not of course by compulsion,) in a great measure, to those pursuits, whose direct tendency it is to strengthen and cultivate the powers of the understanding, to the partial or entire exclusion of those which enliven and excite the sensibility and the imagination. And the same means may be of service, where the period of parental education is at an end.

13. Though we cannot enlarge upon the observation, yet we must add, that the cultivation of genuine openness and strict veracity is of the utmost consequence, for their own sake, and in connection with the moral progress in general, and especially with the habit of integrity in all its branches. The habit of truth should be the object of assiduous care,



both because it deserves it, and because it requires it. Under the head of *Memory*, in *INTELLECTUAL Education*, we have already made some remarks on the grand *mental* cause of falsehood. Fear, in all its directions, (whether of sensible pains or privations, of parental displeasure, of disgrace, &c.) is the most powerful *moral* cause: and firmness of mind, and habitual confidence, must be cultivated with a view to prevent it. If no *deception* (we go beyond the direct employment of actual falsehood) be ever employed in our intercourse with our children; if truth, in all its branches, be constantly the subject of our approbation, and departures from it, (however marked with ingenuity, wit, or even good intentions,) of our disapprobation; if our reproofs and punishments be not too severe; if the consequences of ill conduct be as far as possible alleviated, where followed by a frank avowal of it; if confidence be given with caution that it be not misplaced, (and thus falsehood encouraged by success,) yet that caution do not degenerate into suspicion; if wilful departures from truth be uniformly associated, in a reasonable degree, with their natural effects in a want of confidence; if more direct and powerful punishment be employed where this means is inadequate, (as it sometimes will be, since, without deception, we cannot give the idea that we disbelieve the lying child as much or as long as the lying man;) if moral and religious principle be employed, as occasion may require and direct, to aid the representations of prudence; the effect of all will be decidedly and permanently beneficial; the love of truth, and the habit of veracity, will grow and flourish; falsehood will become the object of shame and abhorrence, and will be habitually and carefully shunned, as an evil of incalculable magnitude. Miss Edgeworth's Chapter on Truth, we have already referred to. Those who follow us with satisfaction in our next division will, in some instances, go farther than she does: but it is an excellent chapter; and some of her tales in "The Parent's Assistant" will afford a real assistance to parents, in the cultivation of this inestimable quality, and of integrity in general.

14. Some other hints, respecting the means and manner of cultivating the moral sense, may be derived from the remarks in the next general division: and we shall only add here, preparatory to it, that the cultivation of the religious principle is of the utmost consequence, to give vigour, stability, purity, and correctness to the conscience.

IV. *Early religious Education.*—*Religious truths* are those which immediately respect the character of God, and his dealings with mankind. *Religious affections* are those which gradually rise up in the mind from impressions, or reflections, respecting the character and dealings of God; for instance, gratitude for his goodness, awe of his power, reverence for his greatness and knowledge, fear of his displeasure, desire of his approbation, obedience to his will, confidence in his wisdom and mercy. When religious truths are accompanied with the corresponding religious affections, and thereby influence the conduct, they are called *religious principles*; and the affections themselves, when they influence the conduct, are also called religious principles. A man cannot be said to have religious *principles*, merely because he believes there is a God, and has right ideas as to his character and dealings. Religious truth may be possessed, without its influencing the heart and life; and when that is the case, a man cannot truly be said to be a religious man, nor his principles religious. Whatever those opinions and desires are, which influence the dispositions and the conduct, those are our principles; and if they are inconsistent with religion, or at least have nothing to do with religion, we are not religious, and

cannot be said to live religiously. It appears desirable to mention these things, plain as they certainly are, because many, it is to be feared, imagine that they are giving their children religious *principles*, when they are only teaching them religious *truths*. If these influence the conduct, it must be by their exciting hopes and fears, desire and love: if awe and reverence, love and gratitude, the desire to please, and fear to offend, be not produced in the youthful heart, it is of comparatively little consequence that we teach them to repeat, or even to understand the most important truths respecting God. Religious knowledge may exist without religious affections; and it is perhaps because this distinction is not sufficiently observed, that so many unhappily suppose that religious principle is *easily* acquired, and even that it will come of itself. Where the understanding is tolerably well cultivated, a considerable degree of religious knowledge may be gained by any one without much trouble. We have only to read our bibles, and we must learn from them the most important truths. We have only to frequent the house of religious worship and instruction, or read such books as are accessible to almost every one, and we shall be able to gain pretty clear and accurate views as to the import, and extent, and connection of those truths. All this is very useful, and it is an excellent foundation for right affections; and it serves to strengthen and enliven them, where they have been formed: but all will not do without the affections themselves. Perhaps it may be truly said, that a young person, of a good understanding, and a ready retentive memory, may gain, by a day's instruction, an acquaintance with all the grand leading truths of religion. But can any one truly affirm, that thus the love and fear of God may be acquired, as habitual affections of the mind; that thus they may be made actuating principles of the conduct? Daily experience must convince us, that it is only by careful and long continued cultivation of those affections, that we can give them sufficient power to enable them to regulate our conduct and disposition; and this even where they have happily been early and successfully implanted by wise and religious parents and friends: and experience must convince us how difficult this cultivation becomes, where it has been early and long neglected; and this in proportion to the degree in which it has been neglected, in proportion to the degree in which our prevailing habits and dispositions are consistent or inconsistent with religious principle.

With respect to the communication of religious knowledge, the business of parents is, in the early stages of education, comparatively plain and easy: indeed the chief danger is attempting to do too much. The progress of the understanding is necessarily slow; and as much injury may be done by endeavouring to hasten it too much, as by suffering it to go on without direct cultivation. We must, therefore, aim to proportion the communication of truth to the faculties of those who are to receive it. The most important truths respecting the attributes and dealings of God are the most simple; and though even these cannot be fully comprehended by a child, yet they can be so far understood, as to lay the foundation of religious affections and of religious conduct. It may not be desirable, in the earliest periods of instruction, to communicate all those truths together, or to dwell long at a time upon them: opportunities too should be chosen, when the little mind is alive and active, but at the same time disposed for thought; but they should be frequently chosen. When once some notions respecting God have been introduced into the mind, they should not be allowed to escape, nor to lie unemployed, but should often be repeated, and connected with various other thoughts.



thoughts which naturally lead to them, and particularly with those which are pleasing, and likely of themselves to be repeated. For instance, children should be taught, when any observation of their own leads them to it, that it is God who keeps us alive, that it is God who takes care of us, that he made the different objects which attract their attention, that it is he who makes the leaves and the grass grow, and the fields look beautiful, &c. Need we apologize for this minuteness? If it should prove useful to any of those respectable mothers who are endeavouring to give their children early religious knowledge, or to any of those who may hereafter fill that important relation, we are satisfied.

Perhaps before any ideas respecting the Supreme Being are introduced into the mind of a child, circumstances may have led the parent to speak to him of the good Jesus. Most persons who have access to books, have opportunities of shewing their children pictures of the gospel history; and though these may not suit the taste or understanding of those whose minds are cultivated, yet if they are tolerably correct, they have a very important effect in giving distinct and vivid conceptions respecting our Saviour, and thereby produce an interest in several circumstances related in the gospels, which may be made intelligible to a mind scarcely capable of receiving the idea of God. But when a child has been taught the leading truths respecting God, then the chief truths respecting Jesus should be connected with them: for instance, that he was sent by God to tell us that we shall live again, and to teach us what God would have us do, how we may please God, and what will displease him. If we do not think it necessary to go beyond the plain declarations of our Saviour himself, in relation to his nature, little or no difficulty can attend our instructions respecting him: they may be made intelligible and interesting to those who are too young to form any very distinct idea respecting the Supreme Being, and at the same time will tend to aid the recurrence of the thoughts of God, when they have been formed.

Children at first, probably always, conceive of God as having a human form; but though this can scarcely be prevented, and may not be injurious in the earliest periods of their religious culture, yet we ought to avoid fixing the idea in their minds, by any visible representations of the Supreme Being. We have seen such representations; and however unexceptionable in themselves, (which all are not, for some are calculated to destroy devotion,) we are satisfied that they ought to be left in the way of children. The use of them may aid the conceptions in the first instance, but they will afterwards have a directly contrary effect, and they must impede the refinement of our ideas. Our aim should be, to proportion our instructions respecting God to the understandings of our children; and we should therefore at first confine ourselves to the most simple and impressive truths; but it should always be our endeavour, though we cannot communicate the whole truth, to give them nothing but the truth. Children will form imperfect and incorrect ideas, which will be to be gradually supplied and corrected afterwards; but, if possible, an express declaration on the part of the parent should never be such as must be, or ought to be, rejected, as the understanding becomes more matured.

When and how shall we begin to teach our children respecting God? has, we doubt not, been the solicitous enquiry of many religious parents. "To feel the full force of the idea of God," says Mrs. Barbauld, in the preface of her admirable, and indeed invaluable, hymns, "a child should never remember the time when he had no such idea;" and in this sentiment we cordially agree. As soon as the understanding of a child appears sufficiently unfolded to form some

notion of the inspection and agency of an unseen being, the first opportunity which presents itself should be chosen, and a few impressive thoughts introduced, which afterwards, in all probability, will often excite the enquiries of the child, and lead on to the gradual communication of all that is necessary. At what period the understanding may be expected to be thus unfolded, cannot, we imagine, be exactly specified; but it will probably be found to be before the age of three or four years. Nor can any definite advice be given respecting the mode of first introducing these thoughts; but if a parent be sufficiently desirous of finding opportunities, they will not be long wanting, particularly in reference to the younger children.

There can be little doubt that the best mode of early religious instruction, is by conversation; and that in almost every period of it, this should, as much as possible, be encouraged, provided that care be constantly taken, to make it consistent with the reverence with which we should always think and speak of God. But it will seldom be long after a child has learned something of God before he is able to read respecting him. His attention should then be led to some of the most impressive and interesting passages of the bible, with which parents should also make themselves familiar; and perhaps not long after it may be desirable to lead him to learn some of the most striking expressions respecting the attributes of God; such for instance as are contained in the 103d, 139th, and 145th psalms. In this state of religious instruction, some of Mrs. Barbauld's hymns may be advantageously read, and perhaps committed to memory; as also some of Dr. Watts's, either in the state in which they were left by the author, or as altered by later editors (according to the views of the parent); and for the same purposes, we cannot but mention a very superior little publication, entitled *Hymns for Infant Minds*. Many of these hymns are in every respect unexceptionable, containing simple, affecting, and often elegant statements, of the fundamental principles of piety, and of Christian truth and duty in general; and the rest may, in private use, be either altered, or omitted, at the discretion of the parent. They proceed, we believe, from the same source as 'My mother,' the delight of affectionate children, and (except the last verse) truly excellent in itself, and in its effects on their minds. About the same period, (which will probably be about four or five years of age,) the plan of catechizing may be advantageously begun. A first catechism should be very short, and as simple as possible. The grand advantage of this mode of religious instruction is, to lead to conversation, and to the gradual explanation of the more usual terms respecting religious truth and duty, which will essentially contribute to prepare the way for farther information. "It is objected to catechizing, (says Dr. Priestley, in the preface of his catechism for children,) that, in this method of instruction, we teach children the use of words, before we can possibly give them adequate ideas of their meaning; and therefore, that we only lead them to entertain a confused and wrong notion of things. But this is, in fact, the case with almost every word a child learns; and there is no remedy for it. Children learn all words mechanically, by imitation; and from the same principle, will even repeat them in connection with other words, long before they have any tolerable idea of their meaning, as may be found by questioning them about the words they use. But by using them themselves, and hearing other persons use them, in a great variety of connections, they learn their true sense by degrees. This, however, is always a work of time. Besides, an imperfect knowledge of things is often better than no knowledge at all. In this



this case, if a child do but entertain a very imperfect idea of God, of his duty, and of a future state, he will get such ideas as will be of some use to him at present, but of much more use as he grows up; and they will be of much more use then, for having been impressed early."

We are decided advocates for the early employment of the memory in the acquisition of religious knowledge; and in laying up a store of devotional compositions and expressions. The full force of what is thus acquired cannot be understood at the time; but such expressions serve as a bond of association for the ideas derived from future impressions, and make these more practical; and at the same time prepare a fund of the most valuable and interesting occupation for the mind, when, from weakness or depression, the higher intellectual faculties cannot be exerted. On this point, however, we have already offered some remarks in the section on *Memory* in *Intellectual Education*; and we shall only observe, that from our own experience we feel confident that such occupations need not, in any way, impede the pleasures of childhood. "Children who are properly trained," says Mr. Edgeworth, (Prof. Ed. p. 91.) "employ their thoughts on serious subjects, without being urged to it." We have known the voluntary (and indeed unsuggested) repetition of Dr. Watts's little hymn, beginning 'Great God to thee my voice I raise,' (in a tone of serious sweetness, simplicity, and quiet enjoyment, which we shall never forget,) cheer a wakeful hour of the night, when the little creature (then between five or six years old) could not have any impression to destroy the feeling of solitude, and soothe to a tranquil composure, which made her say, when spoken to by her parents from an adjoining room, that she was very happy. Such circumstances should never be made the subject of commendation to a child; but we need not say, that they reward the parents' efforts and solicitude, as the early promise of moral worth.

Children cannot be too familiar with the historical parts of the bible; and with those other parts which will assist in cultivating their ideas with respect to God and duty. To give them a few general notions of the scripture history, they may learn some short historical catechism (e. g. Dr. Watts's, either in its original or altered state); and when they are old enough to understand a regular abridgment of the bible, a simple and correct one, (such a one, we should say, as Mr. Turner's,) will be found of great service in connecting together the separate narratives which they read or hear.

It will also be of great importance, that parents should do what they can to enable children to understand what they read; and here they will find the knowledge which they have themselves acquired, from various sources, in the earlier part of their lives, of singular advantage to them. If unhappily they have too much neglected the acquisition of such knowledge, still if they are in earnest in the work, they will avail themselves of any opportunities which they may have of gaining the requisite information; and perhaps it is not one of the least advantages attendant upon this branch of religious education, that it makes a parent's own knowledge more complete and practical.

In the early periods of religious instruction, the object must be to communicate knowledge gradually; in the later periods, to cultivate such a taste as will lead young persons to seek for themselves the sources of knowledge. If the cultivation of the religious affections go hand in hand with the communication of religious knowledge, some interest will be felt in all religious knowledge which is intelligible; and the field is so wide and interesting, and valuable and instructive books are now so much in the power of every one, that if a young person have acquired that taste, and it is sufficiently countenanced on the part of the parents, particularly by

early habit, the leisure of the Lord's day at least will seldom fail to be given to the pursuit of religious knowledge.

It is of great importance in early religious instruction, that we should not attempt to explain to children what is beyond the actual state of their understandings; but accustom them to wait patiently until their minds are more advanced. If parents sufficiently possess the confidence of their children, they will be readily satisfied when they are told, with respect to any difficulty, that they cannot understand that now, but that those who are older, and know more, do understand it, and that they will too. Where we can make them fully understand the reasons of our own conduct, or the reasons of what they know of the dealings of God, this should be done; and their inquiries should be encouraged; but even with respect to our own plans and injunctions, they must often exercise confidence and submission; and it is wise early to produce the same with respect to the dealings and commands of God. They can, in some cases, be made to perceive that they now understand what they did not at some past period; and still more easily, that they can themselves understand what their younger brothers and sisters cannot. As they advance in observation and understanding, and make inquiries with respect to the providence of God, it will sometimes be necessary to go further, and impress upon their minds the idea that there are some things which we ourselves, and even the wisest of mankind, cannot fully understand, but that in heaven we shall know more, and shall understand what we now cannot. To keep up a disposition to research and inquiry, is highly important; but it is also important so to regulate the understanding and imagination of the young, that they may be prepared for difficulties; prepared to expect that in the works and ways of God they shall meet with what they cannot understand; to feel confidence in the grand truths of religion, though accompanied with difficulties; and to obey even where they do not see the reasons of the commands of God.

Though religious belief must, in the early periods of life, be chiefly founded upon authority, yet we ought, as circumstances permit, to render it rational, by shewing the grounds of it. The convictions arising from early education, founded solely on parental influence, are, indeed, often as effectual in regulating the conduct, and so far as valuable as those which are the result of individual examination; but it will too often happen, in this age of inquiry, that where this is the only foundation, those convictions will easily be shaken, especially where they oppose wrong dispositions. Important truths, of the just foundation of which we are ourselves firmly convinced, on patient examination of their evidence, should be early instilled into the mind, even when the grounds of them cannot be shewn; they will indeed to a certain extent be prejudices, but so are all the convictions of children, excepting those which they derive from the evidence of their senses. It is a part of the wise ordinations of providence, that before the understanding can properly exert itself, a lively belief may be formed in truths of importance for the conduct of life; and by producing that belief, we not only do what is necessary for the right direction of childhood and youth, but we in reality give the best preparation for what is emphatically called a rational faith. And this will be easily formed, if we have been careful to communicate truth only. The proofs of the being and attributes of God may be made intelligible even to children. They may early be taught some of the grounds of our belief in the divine authority of Jesus Christ; and at a subsequent period, of our belief in the genuineness of the Scripture. As they advance in life, books may be put into their hands, which will most materially assist in forming a rational conviction; and in this connection we cannot but



## MORAL EDUCATION.

strongly recommend (as universally unexceptionable) Paley's Evidences of Natural Theology and of Christianity. And if parents, with a view not only to their own improvement, but to the improvement of their children, would make these books familiar to themselves, they would thus obtain the power of communicating to them, at comparatively an early age, the grounds of their belief, and give to their conviction of the most important truths, a firmness which nothing could afterwards shake.

We cannot flatter parents by saying, that the religious instruction of the young can be conducted without steady efforts on their parts; but their duty is plain, and their reward will be great. Notwithstanding the circumstances and the fashions of the times, one day does in a great measure remain our own; and we earnestly wish that parents would have the firmness to make its employments and pursuits such, that that day, at least, may bring with it the expectation and desire of religious instruction. This is taking the most unfavourable case; but a mother, and it is from maternal influence and exertion that we must expect most in the early periods of education; a mother, if not immersed in the occupations and pleasures of life, will often find opportunities of giving religious instruction, and of strengthening the desire to attain it.

In a former part of our article, we spoke of the filial affections as the best foundation for the religious affections. Where love and gratitude, and submissiveness, have been formed towards the earthly parent, they will easily be transferred to our heavenly Father. Where these, from any cause, are wanting, they can only be gradually supplied, as the understanding and conscience open, by the same impressions with respect to God, by which they are produced with respect to the parent. The religious affections will often be found to bear a great resemblance, in their peculiarities, to those of the filial affections; and this is particularly the case with respect to the disposition to obedience. We have no hesitation in pronouncing submissiveness to parents to be, very generally, almost an indispensable requisite to the early formation of that disposition to obey God, which is the object of all religious culture, and without which the most lively affections are worthless. If a child love his parents, if he even fear them, it does not necessarily follow, and the contrary too often happens, that he has the habitual disposition to obey them; and if love and fear exist towards his parents, without that disposition, they will not in all probability early produce it towards God; and if they do not early do it, they too seldom will at any future period.

Where filial love has been produced in the mind of a child, *love towards God* will go hand in hand with an acquaintance with his goodness in its various forms. Before the understanding of a child is sufficiently unfolded, to form some notion of the inspection and agency of an unseen being, (which appears to be the proper period for the commencement of religious instruction,) there will be feelings in his mind, connected with the expressions *good, kind, doing good, taking care of*, &c. Suppose a mother, when first communicating some knowledge of God, speaks to her child of the *good God* who is very *kind and good* to us, is always *doing us good*, and *taking care of* us, &c., it is obvious, that the feelings already connected with those words, will become connected with the word *God*, and with whatever notion the child may form of God; and thus the beginning is made of love to God. We tell our children that God loves us, and is our heavenly Father; and the love which they have towards us, begins to unite itself with the idea of God. Where *we* have ourselves right feelings towards God, they will often influence our tones and manner of speaking; and

these, by the influence of our associated nature, call up and exercise similar feelings in their minds, and thus unite them more firmly with the idea of God.

If we are sufficiently in earnest in cultivating the religious affections of our children, we shall find various opportunities of giving them proofs of the goodness of God, suited to the state of their understandings, in the works of nature around us, in the formation of our frame, in the events of life, &c., and while seeking for these proofs, for the cultivation of their affections, we shall cultivate our own. We shall lead them to think of God as the giver of every good thing. And we shall often speak of him as having sent our Lord Jesus Christ to teach us how to be good and happy. We shall tell them that he loves those who try to please him, by being and doing good. We shall shew how much good it does to us, to do what God has commanded us; and we shall often speak to them of that world, where God will for ever make the good happy, happy beyond any thing we can now think of. As opportunity offers, and the understanding will bear it, we should explain, as far as we are able, those things which at first sight appear inconsistent with the goodness of God; and especially, we should lead them to feel complete confidence in the divine goodness, though they cannot perceive that all things are for good. Filial confidence should be early and carefully cultivated towards the parent, and then it will be easily transferred towards God.

Though we should frequently introduce thoughts of the divine goodness, we must be careful to take opportunities for this purpose, when the minds of our children are favourably disposed to the reception of them, when the attention will be excited by them, and thus some impression produced. And, considering how short the time must be, during which the attention of a child can be given to thoughts of an unseen being, we should rather aim at *frequency* of impressions, than at the *long continuance* of any one.

We have only spoken of the cultivation of the religious affections, by conversation respecting the divine goodness; but it is obvious that this is only one means. The delightful representations of God, which are given in the Scriptures, and all that children read in other books respecting his goodness and mercy and paternal care, and all that they hear to the same purpose in the public services of religion, will, if sufficiently attended to, contribute their share towards the love of God, by calling into exercise the affection which is already formed, and by leaving new impressions which will contribute to its liveliness and vigour. And there are two other most important means, the one is leading them to express their feelings in prayer to God; and the other, so guiding their conduct and dispositions by precept, discipline, and example, that they may think of God with pleasure, because their own hearts tell them that he views them with approbation.

It will not be necessary for us to be equally minute in shewing the formation of the *fear of God*. Nearly the same means of culture must be adopted; but our success will be more sure. Pain affects the mind more powerfully than pleasure; and fear, which springs from pain, is, therefore, more active and easily formed than love, which springs from pleasure. It is, perhaps, impossible, that the fear of God should not spring up in the mind, where tolerably correct ideas respecting him have been communicated. Every thing which is attentively heard or read, respecting the greatness, majesty, power, and justice of God, tends to produce the awe and fear of him; and this is heightened by the declarations of the Scriptures respecting the dreadful consequences of disobedience to the will of God. While we endeavour early



early to cultivate reverence and awe of the Supreme Being in the minds of our children, we must, however, be careful not to heighten it into terror. A due proportion of the fear of God, is, in general, necessary, to render the love of God a steady actuating principle of the conduct; and when properly blended with it, and moderated by frequent recurrence, (as all feelings are, unless otherwise enlivened,) it in reality increases it; but often has the exclusive cultivation of fear been the fertile source of superstition, and of degrading ideas respecting the God of love; and still more frequently has it contributed to destroy the influence of religion, by making the thoughts of God painful to the minds of the young, and thereby destroying all disposition to cherish them. We remember hearing a person of great piety, benevolence, and amiableness of disposition, express the idea, that in all her endeavours to cultivate the love of God, she continually felt the ill effects of the terrific views of the Supreme Being, which had been early impressed upon her mind, almost to the exclusion of those representations which would have excited love. She was fully convinced of the goodness of God; but fear seemed to overpower her convictions, at least to prevent their exciting their due proportion of love; and the lovely and paternal attributes of the Supreme Being were seldom a source of delight and consolation to her mind. On a heart less pure, and a judgment less enlightened, either superstition or practical atheism would probably have exercised absolute sway.

We have more than once stated, that the religious affections may exist, even with a considerable degree of vividness, without having much power in regulating the heart and life, without becoming *religious principles*, i. e. *habitually actuating motives*. Our object throughout, in our endeavours to bring up our children religiously, must be to give the affections which we cultivate in their minds towards God, as much power as possible as actuating motives; to give them as much influence as possible over the other dispositions and the conduct. We are not to leave this till the affections, by frequent impressions, acquire great firmness and vividness; but to aim to give them their proportional influence in every stage of their progress. A child who is capable of understanding something of the inspection and agency of the unseen God, who has at all learnt to desire his love, and to fear his displeasure, is capable of being influenced by religious motives. This we know from experience. That the religious affections may subsist, without properly influencing the conduct, may be understood from what happens in the case where submission has not been cultivated in a child through the false indulgence of a parent. Such a child is frequently found to be very affectionate, and often manifests a warmth and strength of love which justly delight the parent's heart, and yet excite regard to a parent's feelings and dispositions, only where its own little selfish gratification prompts to such regard. In like manner, lively compassion to the distressed may exist, and often does exist, even in young persons, without exciting one active endeavour to relieve. And their religious affections may exist, and even with considerable liveliness, (especially the feelings of love and gratitude,) without acquiring any influence over the heart and life.

Our aim then must be to give them this influence; and in proportion as they acquire it, will the affections themselves acquire activity and vigour. It cannot be doubted that religious obedience is the best means of cultivating, supporting, and confirming the religious affections: that habitual regard to the will of God, where ideas respecting him are tolerably correct, will always cherish the love of God where it exists, and will gradually produce it where before it

did not exist. He who is brought up in the fear of God (we do not mean slavish terror but reverential awe), and under its influence has acquired an habitual regard to his will, will not be long destitute of those feelings with respect to him, which the thoughtful contemplation of the Scripture declarations is so well calculated to excite.

The foundation of such regard to the will of God, is to be laid in the mind of a child by forming the habit of filial submission to his parents: and where this, to any great degree, is wanting, the difficulties of obedience to the will of God will too generally prevent the formation of that actuating regard to it which is the sum and substance of religious principle. Parents should, therefore, as much as possible, acquire influence over the minds of their children, if from no other motive, with a view to make them religious. We cannot too strongly impress it upon our minds, that habitual filial submission to earthly parents is the best foundation for habitual filial submission to our heavenly parent.

Another point is, that we early accustom our children to consider it as an object of the first importance, that they should do what God commands, and avoid what he forbids; unfolding to them, as circumstances enable us, the consequences of obedience and disobedience in this life; but particularly impressing upon their minds the more certain and obvious consequences in another life. Whether we should most excite their hopes or their fears, must perhaps be left to be determined by their peculiar dispositions and habits; but, without a doubt, both should be employed as occasion directs: and they should, from a very early period, be led to consider it as certain that we shall all live again, and be happy or miserable according to our conduct and disposition in this life. I do not mean that these motives should be brought forwards too often, for thus they may lose their force; but on all occasions where the mind seems capable of feeling their force, and of being influenced by them, then should they be employed.

Where these hopes and fears exist with tolerable strength (or even where children have learnt the rudiments of religious knowledge, and have been accustomed to desire the love, and to fear the displeasure of their parents), the idea of God, as the constant witness of all their words and actions, will often produce the desire of his love and approbation, and the fear of his displeasure. This powerfully aids the influence of the religious affections; and the impression that God loves the good, and is displeased with the wicked, should be early produced and frequently exercised. When instances of truth, obedience, kindness, disinterestedness, and the like, in our children, have obtained our own approbation, with our tender endearments should often be connected the idea, that the great and good God, our heavenly Father, who always sees us, is also pleased with them and loves them. When the contrary faults have excited our displeasure, with our reproof or correction, we should occasionally introduce the impression of the divine displeasure; carefully, however, connecting with it the idea, that as they may regain our approbation, so they may also regain the approbation of God.

Further, we should early accustom our children to consider what our duty is. For this purpose, we must make them early and well acquainted with the practical parts of the New Testament; often bring them to their recollection in connection with what is right or wrong in their conduct, and teach them to consider the precepts of Jesus and his apostles as our rule of life, which we must obey if we would please God, and avoid the punishment of disobedience. We should certainly endeavour, where we can, to shew them the reasons of the divine commands; and this more and more as their understanding gains strength; but let it be obvious to



them, that we do ourselves consider it as quite sufficient, if God has commanded us to do, or to avoid any thing. Let us, by every means in our power, inculcate the necessity of obedience to the will of God, and form and strengthen the disposition to submission; and let us habitually cultivate the impression in their minds, that the example of Jesus, and the precepts of the gospel, give us certain information as to the will of God, and that it is our duty steadily to guide our disposition and conduct by them.

It will aid the influence of the example of Jesus, if we cultivate as much as possible that love to him, and gratitude for his exertions and sufferings to do us good, which will readily spring up in the young mind from the thoughtful perusal of the gospel history; and it will greatly aid the power of religious principle, if we often lead them to consider what he did, or what he would have done in like circumstances with us. For a similar reason, we shall do well to make them acquainted with other illustrious examples of Christian worth, particularly among the young; and all have one book at their command in which they will find a store of such examples as have, in innumerable instances, been highly beneficial.

Another point of great importance is, that we early accustom children to reflect on their actions and dispositions, and compare them with the Scripture rules of duty. A want of this tendency to reflect on the past, is one cause of that deficiency which we often observe in the power of the conscience, even where its dictates are correct. It should be exercised as soon as our children are capable of recollection and reflection; and it will lay the foundation of a most important habit, if we accustom them, as soon as their minds have made sufficient progress, every evening to think over the conduct of the day. Such an employment, early pursued under the observation of the parent, encouraged, and indeed at first exercised, by parental aid and influence, will have the most valuable effect. It will produce an habitual disposition to self-inspection; it will make duty more thought of, and obedience to duty more an object; and it will, if steadily cultivated, become itself a habit which will retain its influence through life, and effectually prevent that thoughtlessness as to our conduct and the effects of it, which is among the foremost ranks of the causes of disobedience and neglect of Christian duty.

Once more, as soon as our children are capable of it, we should teach them to pray to God. By praying, we mean expressing to God as ever present with us, the sentiments we have of his being and perfections, the feelings which those sentiments excite, (whether of gratitude, reverence, love, fear, or penitence,) and our supplications for future good. At first it may be necessary to supply our children with words; if so, they should be simple but expressive, and the whole should be very short. We may by degrees lead them to express their thoughts and feelings in their own artless words, and the more this is done the better; but whatever means we employ, they should be used regularly, and at least daily; and by our own manner and expressions, we should always make this exercise of the devout affections serious, reverential, and impressive. When right ideas and feelings towards God have been duly impressed, prayer early made habitual, exercised regularly, seriously, and thoughtfully, is perhaps of all the most powerful means (and a most powerful assistant of every other means) of cultivating the devout affections, of making them actuating principles, of producing a steady, habitual, reverential regard to the will of him who always sees us, knows every purpose of our hearts, and will finally be our judge. And (at the risk of being thought to have altogether lost sight of the nature of

our work) we feel impelled to add that family worship should go hand in hand with private prayer. Independently of its great importance to ourselves, there is no doubt that it eminently contributes to impress deeply a sense of religion on the minds of children and domestics, and to aid the influence of its sanctions.

The cultivation of religious affections and principles, must be expected to be a work of time; and it should be our endeavour to proceed in it steadily rather than quickly. The growth of affections and habits cannot be forced; and we may, by too great haste and too little attention to the natural progress of the mind, prevent, rather than promote, the influence of religion in the heart. It must be our aim to choose opportunities for this purpose, when the mind is in a fit state for the reception of religious impressions; to seek for them often, to make our instructions interesting. The point must not be given up because we do not succeed all at once; if some means fail we must try others, employing the influence of religious fear or love, as we find the dispositions of our children require it, but endeavouring, by every means in our power, to give their young minds a permanent bias in favour of religious principle. We must make religion as interesting as we can to them, but never lessen their reverence for it, nor their ideas of the necessity of obeying the divine will.

We must not consider religion as confined to the affections, dispositions, and habits, which directly respect God, but bearing in mind that every right disposition and habit constitutes a part of it, and contributes to increase its influence, that every wrong disposition and habit is forbidden by it, and contributes to increase its influence,—we must do every thing in our power to cultivate and cherish the one, and to check and repress the other. Nothing destroys religious principles sooner, than the indulgence of sinful dispositions and sinful habits; and he who would have his child religious, must carefully guard against whatever would lead to them. In the words of the great Hartley, “affectionate parents” should “labour from the earliest dawnings of understanding and desire, to check the growing obliquity of the will; curb all sallies of passion; impress the deepest, most amiable, reverential, and awful impressions of God, a future state, and all sacred things; restrain anger, jealousy, selfishness; encourage love, compassion, generosity, forgiveness, gratitude; excite, and even compel to, such industry as the tender age will properly admit of.” These words may be said to contain the sum and substance of religious and moral education; and those who have leisure and ability to study the principles of that eminent philosopher, as contained in his *Observations on Man* (and especially as respects our present object, in the *Rule of Life*, contained in the second volume) will find them of inestimable use in the regulation of their own dispositions, and the fulfilment of their duties, particularly in that most important duty, the religious education of the young.

As mothers have, in the early periods of education, peculiar influence, and opportunity of cultivating the religious affections and principles, we earnestly wish to see them making this peculiarly an object, cultivating their own affections and knowledge with a view to it, bending their plans of life and their social intercourse as much as possible to it, and regarding nothing short of absolute necessity a sufficient excuse for partial attention to it. And, with the same view, it should be the steady endeavour of all parents to cultivate the understandings and enlarge the minds of their daughters; to teach them the wise employment of their time; to teach them more noble accomplishments than those of show and taste; to implant in their minds,

and



and steadily to cherish religious affections and principles. While they pay due attention to other branches of knowledge, let them not neglect the knowledge of God and duty: while they acquire those accomplishments that will grace the social circle, and add attractions to goodness, let them learn to set a higher value on, and more sedulously cultivate, the inward adornings of the mind. They should be educated as those who may be engaged in the most important of all duties; they should be so educated, that, should they be called to fulfil those duties, they may train up souls for immortal happiness.

We wish to add, that early attention to the religious education of our children, need not in any way lessen the activity or enjoyments suited to their age. We know this from experience, and can speak with confidence. The little girl, to whom we referred in a former part of this division, is as playfully active, and as regularly happy with her dolls, her bricks, her rude drawings, and her out-of-door amusements, as any child we ever saw. If it were not so, we should fear, lest the religious culture she has received should have been premature and injurious: but we see, in various ways, that it directly, and still more indirectly, promotes her little enjoyments, as well as her mental improvement. We think it proper, however, to observe, that from different circumstances in her situation and early habits, and also, perhaps, from her natural temperament, (which originally manifested too much of what may be termed physical sensibility, and which her parents endeavoured to lessen, or at least to regulate,) this child has peculiar tendencies and opportunities for the religious cultivation of her mind; and in a younger child, though by no means without religious impressions and biases, we have perceived, at corresponding ages, a very material difference in the capacity for receiving ideas, and for forming the rudiments of the affections, respecting the Supreme Being. This we say, lest our remarks should excite any degree of despondency in the mind of any mother, solicitous for the religious welfare of her children; and, in this case, we indulge the expectation, which she may also indulge in any similar case, that by a steady perseverance in the use of suitable means, the end will eventually be answered in the communication of correct ideas and right affections of a religious nature, though the latter will of course be subject to those modifications, which arise from diversities in the original tendencies and acquired dispositions and habits in general.

If our limits would permit, we should be happy to conclude this article by extracting from Dr. Priestley's *Observations on Education*, the whole of the 12th section, in which "the importance of early religious instruction" is argued, with the strength of demonstration, from a "particular consideration of the principles of human nature." We trust few of our readers will omit to avail themselves of his *Observations*; but we cannot forbear quoting one or two passages, and giving a brief abstract of the whole.

After observing, generally, that the impression which ideas make upon the mind, does not depend upon the definitions of them, but upon the sensations and a great variety of ideas which have been associated with them; and, in particular, that in the mind of a person who has been accustomed to hear and think of God from his infancy, who has been much conversant with the Scriptures, and has lived in a general habit of devotion, the idea of God must have acquired a thousand associations, forming one complex feeling, which cannot be fully explained to another, and still less communicated to one who has had no such advantages for religious impressions; this religious philosopher illustrates his observation, by the diversity of feelings, associated, in dif-

ferent cases, with the term *father*, where, nevertheless, the general definition of it must be invariable. He then proceeds:

"In like manner, besides those ideas annexed to such words as *God, religion, future life, &c.* which can be communicated to others by their definitions, there are what are sometimes called *secondary ideas, or feelings*, which are aggregate sensations, consisting of numberless other sensations and ideas, which have been associated with them, and which it is absolutely impossible for one person to communicate to another; because the same education, the same course of instruction, the same early discipline, the same or similar circumstances in life, and the same reflections upon those circumstances, must have concurred in the formation of them. They are, however, these infinitely complex and indescribable feelings that often give those ideas their greatest force, and their influence upon the mind and conduct: because dispositions to love, fear, and obey God have a thousand times followed those complex feelings, and pious and worthy resolutions have been connected with them. On this account, persons whose education has been much neglected, but who begin to hear of religion, and apply themselves to it late in life, can never acquire the *devotional feelings* of those who have had a religious education; nor can it be expected that they will be uniformly influenced by them. They may use the same language, but their feelings will, notwithstanding, be very different."

Dr. P. then shews, that this is nothing more than what takes place in other similar cases; and next advances some impressive statements, respecting the powerful influence of general *states of mind, turns of thought, and fixed habits*, (in connection with which, we feel impelled to refer our readers to his discourses on habitual devotion, the duty of not living to ourselves, and the danger of bad habits, in which, in a most simple and striking manner, he has made some of the leading principles of mental philosophy eminently subservient to the interests of religion.) He urges the importance of early religious education, from the means its influence affords of reclaiming those who, on the entrance upon the world, may have thrown off the restraints of duty, and from the great loss of favourable opportunities for such purposes, caused by the contrary deficiencies. He shews that through unnatural associations of ideas of honour, spirit, &c. with irreligious and pernicious habits and practices, and of the opposite ideas with some virtuous and religious duties, every thing belonging to strict morals and religion is by many regarded with aversion and contempt; that, for want of early religious impressions, this turn of thinking may be so confirmed, that nothing in the usual course of human life shall be able to change it; and that the very things which are the means and incitements to religion and devotion, in previously well-disposed minds, have the very opposite effect on others. This he illustrates and confirms by additional considerations; and concludes,

"The plain inference from all this is, that *if we wish that religious impressions should ever have a serious hold upon the mind, they must be made in early life*. Care, however, must be taken, lest, by making religious exercises too rigorous, an early aversion be excited, and so the very end we have in view be defeated."

This inference, we are fully convinced, is alike sanctioned by the soundest views of human nature, and by extensive and enlightened experience; and upon it, our preceding statements rest for their justification.

In our last article on the subject (*PHYSICAL Education*), we shall have an opportunity of suggesting some hints on a point of great moral importance; and we shall also defer



to that article, a comparative view of the advantages and disadvantages of public and private education, which (with some other general subjects referred to in *INTELLECTUAL Education*;) will be best brought forwards as the conclusion of our series.

*MORAL Evidence, Evil, Fables, Good.* See the several substantives.

*MORAL Impossibility*, is what we otherwise call a *very great*, and almost *insuperable difficulty*; in opposition to a physical, or natural impossibility. See IMPOSSIBLE.

*MORAL Liberty, Necessity, and Perfection.* See the substantives.

*MORAL Philosophy*, a science whose object is to direct and form men's manners; to explain the nature and reason of actions; and to teach and instruct us how to acquire that felicity which is agreeable to human nature. See *Moral PHILOSOPHY*.

Moral philosophy is the same with what we otherwise call *ethics*, sometimes *morality*. See also OBLIGATION and VIRTUE.

*MORAL Quantity.* See QUANTITY.

*MORAL Sense*, the faculty whereby we discern or perceive what is good, virtuous, beautiful, &c. in actions, manners, characters, &c.

An ingenious author has endeavoured to prove, that it is a peculiar sense whereby we get the ideas of these things; and denominates it a moral sense. See SENSE.

*MORAL Theology* is that which treats of cases of conscience; called also *casuistry*, or *casuistical divinity*.

*MORAL Universality.* See UNIVERSALITY.

*MORAL of a Fable* is the instruction drawn from it.

Thus when Phædrus at the end of a fable adds, *Hoc illi dictum qui*, &c. this makes what we call the *moral*: the Greeks called it *επιμυθιον*, when at the end of the fable; and *προμυθιον*, when at the beginning. Among the Latins it was called *affabulatio*. See FABLE.

MORALEDA, in *Geography*, a town of Spain, in the province of Granada; 10 miles E. of Loja.

MORALEJA, a town of Spain, in the province of Leon; 6 miles S.E. of Zamora.

MORALES, CRISTOFERO, in *Biography*, an eminent Spanish composer of music, in the service of the pontifical chapel at Rome, and who flourished from the year 1540 to 1564. He preceded Palestrina, who was not twelve years old when Morales first appeared as a composer. Several of his productions were published at Venice among those of Costanzo Festa, Adrian Willaert, and Archadelt, with whom he was contemporary, besides the following works, to which no other name was prefixed than his own.

Two books of masses, the first for five voices, the second was dedicated to pope Paul III. for four, 1544, Venice. Magnificat 8 tonorum, 4 voc. Ven. 1562. Lamentationes Hieremix, 4, 5, & 6 vocum, Ven. 1564. Adami (Osservazioni, p. 165.) tells us that his famous motet, "Lamentabatur Jacob," which was preserved in the archives of the pontifical chapel, at the beginning of the present century, and annually sung on the first Sunday in Lent, is a wonderful composition. "Il quale in vero è una maraviglia dell' arte." Ib.

Several of his motets were published at Venice 1543, among the "Motettæ trium Vocum ab pluribus Authoribus compositæ;" and are preserved in the British museum: the style of which, though learned for the time, is somewhat dry, and the harmony, by his frequent use of unaccompanied 4ths and 9ths, uncouth and insipid; yet, till

supplanted by the more pleasing works of Palestrina, his compositions were in very high favour at Rome, in the papal chapel, where he was a singer during the pontificate of Paul III.

MORALES, AMBROSIO DE, a Spanish historian and antiquarian, was born at Cordoba in the year 1513. His father, Antonio, was a physician of such high reputation, that the marquis de Pliego presented him the house in which Seneca was said to have lived, saying, that the dwelling of the wisest Cordoban ought to be inhabited by none but by a Cordoban, who was himself equally wise; and cardinal Cisneros appointed him to the first chair of philosophy at Alcalá. Fernan Perez de Oliva was his maternal grandfather, and Ambrosio says, that he availed himself of his learned geographical work, "Imacen del Mundo," as of a thing which was his own by inheritance. His youthful studies were directed by persons of the highest repute; he became a good Grecian at an early age, and while but a mere child, he translated the fable of Cebes. Notwithstanding his aspirations after literary fame, religious enthusiasm mingled with, and at one time totally suppressed them. He wrote at the beginning and end of all his books the name of Jesus, with an alpha and omega, and composed the following couplet in honour of the name;

"Dulce mihi nihil esse precor, si nomen Jesu  
Dulce absit cum sit hoc sine dulce nihil,"

which he transcribed into all his books, frequently using as a motto "Tiempo fuè, que tiempo no fuè;" Time was when time was not. Sometimes he would use as an emblem, four ravens flying down with bread and meat in their bills, in reference to Elijah, with the motto "Adjicientur."

At the age of nineteen he renounced the world, and entered into a convent under the name of "Ambrosio de Santa Paulo." The world he had already conquered, but in the ardour of youth he had other passions to contend with, and which were not so easily subdued. Determining to secure himself from the sin to which he felt himself most prone, he followed the example of Origen, in the completest and most dangerous way. He recovered from the effects of the wound; his fanaticism sobered down into a quiet and settled bigotry, but it ceased to be a ruling passion. In consequence of this circumstance he was either expelled the order, or quitted it of his own accord. He set off for Rome and narrowly escaped drowning: the danger that he thus incurred he considered as a manifest sign that he was not to proceed on the voyage, and instead of going to Rome for a dispensation to be permitted to remove, he went to court, where his friends had interest enough to procure it for him, and ever afterwards he lived as a secular priest. Soon after this his father died, and he was appointed to a professorship at Alcalá. The object of his most ardent wishes was to excel as a Castilian writer, to investigate the antiquities and write the history of Spain. He began to collect materials for this work in 1541, but it was not for twenty years that he set himself seriously to the subject of arrangement in order to publication, and even then he was deterred from advancing under the notion that Florian Ocampo, the famous chronicler, who had published the fabulous history, had also proceeded down to the Gothic period, and written the antiquities also. At length he was undeceived, and found that Ocampo had made no progress beyond what he had published, and on the death of that author he was made chronicler himself. His first appearance as an author was as the defender of Zurita against his enemies. After this he published several other pieces; and having brought down his history to the destruction of the Gothic



Gothic kingdom, he was sent through Leon, Galicia, and Asturias, to examine the state of the reliques, archives, royal sepulchres, and libraries, in those provinces. This mission employed him several months; but his journal was not published from the original MS. in the Escorial till the year 1765; since which it has been inserted in the complete collection of Ambrosio's works, in 1791-2.

The first volume of history was published at Alcala in 1574, and in 1577 he brought out the second, and with it the book of the Antiquities of Spain, which had been printed two years. The remaining volume was long delayed, for in 1578 he was appointed to the office of vicar and administrator of the hospital de la Puente del Arzobispo, which he held four years, and then resigned, because the duties enjoined by it were too weighty for a man of his years and habits. His third volume, and with that his labour, was finished in 1583, when he was in the seventieth year of his age; the history was brought down to the year 1037. He died at the age of seventy-eight, and was buried at Cordoba, in the church of the Martyrs, by a chapel, to the building of which he had largely contributed. Cardinal Sandoval, one of his pupils, erected a fine monument in gratitude to his memory, which, however, was not completed till after his own death. The works of Morales are said to be of very great value. "As an antiquarian he may be called the Camden of Spain; and as an historian," Mr. Southey asserts, "we have none with whom he can be paralleled."

**MORALEZ**, in *Geography*, a town of South America, in the province of St. Martha, on the Madalena; 32 miles S. of Tamalameque.

**MORALITIES**, in *English Antiquity*. See **MYSTERY**.

**MORALITY** denotes a conformity, in things and actions, to those unalterable obligations which result from the nature of our existence, and the necessary relations of life: whether to God as our creator, or to mankind as our fellow-creatures.

For other definitions of morality or virtue, given by some celebrated writers, as well as different hypotheses relating to its foundation, see *Moral VIRTUE*.

**MORALITY** is also used for the science or doctrine of morals, or the art of living well and happily; deduced from reason, and the nature, relation, and fitness of things. In this sense it amounts to the same with what we otherwise call *ethics*, *moral philosophy*, or the *doctrine of offices*. Notwithstanding the great obscurity and uncertainties in the moral science, Mr. Loeke is of opinion, that the doctrine of manners is equally capable of being brought to demonstration with the doctrine of quantity and number; that is, with the purest parts of mathematics.

According to this author, the idea of a Supreme Being, infinite in power, goodness, and wisdom, whose workmanship we are, and on whom we depend; and the idea of ourselves, as understanding, rational creatures; would, if duly considered, afford such foundations of our duty, and rules of action, as might place morality among the sciences capable of demonstration; in which we need not doubt but that, from principles as incontestible as those of the mathematics, by necessary consequences, the measure of right and wrong might be made out to any one, who will apply himself, with the same indifference and attention, to the one, as he doth to the other of these sciences: for the relations of other modes may certainly be perceived, as well as those of number and extension. *E. gr.* that "where there is no property, there can be no injustice," is a proposition as certain as any in Euclid: for the idea of property being a right to any thing, and the idea of injustice being the inva-

sion or violation of that right, it is evident, that these ideas being thus established, and these names annexed to them, we can as certainly know this proposition to be true, as that a triangle has three angles equal to two right ones. Again, "no government allows absolute liberty:" the idea of government being the establishment of society, upon certain rules or laws, which require conformity to them; and the idea of absolute liberty being for any one to do whatever he pleases, I am as capable of being certain of the truth of this proposition, as of any in mathematics.

What has given the advantage to the ideas of quantity, and made them thought more capable of certainty and demonstration than the ideas of good and evil, right and wrong, &c. is,

1. That the former can be represented by sensible marks, which have a nearer correspondence with them than any words or sounds. Diagrams drawn on paper are copies of the ideas, and are not liable to the uncertainty that words carry in their signification; but we have no sensible marks that resemble our moral ideas, and nothing but words to express them by; which, though, when written, they remain the same, yet the ideas they stand for may change in the same man, and it is very seldom that they are not different in different persons.

2. Moral ideas are commonly more complex than figures; whence these two inconveniences follow: 1. That their names are of more uncertain signification; the precise collection of simple ideas they stand for not being so easily agreed on; and so the sign that is used for them in communication always, and in thinking often, does not readily carry with it the same idea.

3. The mind cannot easily retain those precise combinations so exactly and perfectly, as is necessary in the examination of the habitudes and correspondences, agreements or disagreements, of several of them one with another, especially where it is to be judged of by long deductions, and the intervention of several other complex ideas, to shew the agreement or disagreement of two remote ones.

One part of these disadvantages in moral ideas, which has made them be thought not capable of demonstration, may in a good measure be remedied by definitions, setting down that collection of simple ideas which every term shall stand for, and then using the term steadily and constantly for that precise collection.

The mathematician considers the truth and properties belonging to a rectangle or circle, only as they have ideas in his own mind, which possibly he never found actually existed mathematically, that is, precisely, true; yet his knowledge is not only certain, but real; because real things are no farther, nor intended to be, meant by any such propositions, than as things really agree to those archetypes in the mind. It is true of the idea of a triangle, that its three angles are equal to two right ones; it is true also of a triangle, wherever it exists: what is true of those figures that have barely an ideal existence in the mind, will hold true of them also, when they come to have a real existence in matter. Hence it follows, that moral knowledge is as capable of real certainty as mathematics: for certainty being nothing but the perception of such agreement, by the intervention of other ideas; our moral ideas, as well as mathematical, being archetypes themselves, and so adequate or complete ideas, all the agreement or disagreement we shall find in them will produce real knowledge, as well as in mathematical figures. That which is requisite to make our knowledge certain, is the clearness of our ideas; and that which is required to make it real, is that they answer their archetypes.

But it will here be said, that if moral knowledge be placed in



in the contemplation of our own moral ideas, and those are of our own making, what strange notions will there be of justice and temperance! what confusion of virtues and vices, if every man may make what ideas of them he pleases? It is answered, no confusion or disorder at all in the things themselves, nor the reasonings about them, no more than there would be a change in the properties of figures, and their relations one to another, if a man should make a triangle with four corners, or a trapezium with four right angles; that is, in plain English, change the names of the figures, and call that by one name which is called ordinarily by another. The change of name will indeed at first disturb him who knows not what idea it stands for; but as soon as the figure is drawn, the consequences and demonstration are plain and clear.

Just the same is it in moral knowledge: let a man have the idea of taking from others, without their consent, what they are justly possessed of, and call this *justice*, if he pleaseth; he that takes the name there, without the idea put to it, will be mistaken, by joining another idea or his own to that name; but strip the idea of that name, or take it, such as it is in the speaker's mind, and the same things will agree to it, as if you called it *injustice*. One thing we are to take notice of, that where God, or any other law-maker, has defined any moral names, there they have made the essence of that species to which that name belongs; and there it is not safe to apply or use them otherwise; but in other cases it is bare impropriety of speech to apply them contrary to the common usage of the country in which they are used.

MORAMBO, in *Geography*, a river of Africa, which runs into the Atlantic. S. lat.  $11^{\circ} 55'$ .

MORAND, SAUVEUR FRANÇOIS, in *Biography*, a Parisian surgeon of great eminence, was born in that metropolis in 1697, where his father also practised the profession, and held the office of surgeon-major to the Invalids. Sauveur received his literary education at the college Mazarin, and was instructed in his profession by his father at the hospital of the Invalids. He rose to the mastership of the company of St. Côme, (which was afterwards erected into the Royal Academy of Surgery,) and was appointed demonstrator of surgical operations to that body in 1725. In 1728 he appeared as an author on the subject of lithotomy, and published his "*Traité de la Taille au haut appareil, &c.*;" the high operation being then universally practised by the surgeons of Paris. But, in the following year he was commissioned by the Academy of Sciences to visit London, with a view of witnessing the lateral operation, as performed by Chefelden with so much success; and on his return to Paris, he introduced that mode of cutting for the stone, at the hospital of La Charité, of which he was made surgeon. The success and consequent reputation which attended his new mode of practice, brought a crowd of pupils to his hospital, and multiplied his professional honours. He became director and secretary of his company, and held the latter office with great distinction for many years after it was made a Royal Academy. He was admitted a member of many foreign societies, especially the Royal Society of London, and the academies of Stockholm, Petersburg, Florence, Bologna, and Rouen; and was nominated pensioner and professor of anatomy to the Royal Academy of Sciences at home. He was likewise appointed to several professional posts connected with the army; and in 1751, was honoured with knighthood, of the order of St. Michael. He was every where respected and admired as a gentleman, and as a man of cultivated understanding and taste. He died in 1773, at the age of seventy-six.

Besides the treatise on lithotomy above mentioned,

M. Morand left the following works. "*Eloge Historique de M. Mareschal, premier Chirurgien du Roi,*" 1737. Morand had married the daughter of this distinguished surgeon. "*Refutation d'un Passage du Traité des Operations de Chirurgie en Anglois, publié par M. Sharp, Chirurgien de Londres,*" 1739. This related to an assertion, that the lateral operation had been proscribed in the French hospitals by royal edict. "*Discours dans lequel on prouve qu'il est nécessaire au Chirurgien d'être lettré,*" delivered at the opening of the schools of surgery, in October 1743. "*Mémoire sur les Eaux Minérales de St. Amand,*" "*Recueil de Experiences et d'Observations sur la Pierre,*" 1743. "*L'Art de faire des Rapports en Chirurgie,*" 1743. "*Catalogue des Pièces d'Anatomic, Instrumens, &c. qui composent l'Arсенal de Chirurgie formé a Paris, pour le Chancelier de Medecine de Peterbourg,*" 1759. "*Opuscules de Chirurgie,*" 1<sup>re</sup> partie, 1768, 4to. 2<sup>d</sup> partie 1772.—He was author of several papers, published in the *Memoirs* of the Academy of Sciences, as well as that of surgery; and wrote a history of the latter academy, for the second and third volumes of their memoirs. Eloy Dict. Hist. de la Med. Gen. Biog.

MORAND, JEAN-FRANÇOIS-CLEMENT, a Parisian physician of distinction, was the son of the eminent surgeon, who is the subject of the preceding article. He was born at Paris in April 1726, and received the degree of doctor in medicine in 1750, and was soon afterwards appointed professor of anatomy in the same schools. He obtained a high reputation in his profession, and received many honours, having been elected into the Royal Academy of Sciences of Paris, the Royal Society of London, and many other learned bodies; and he was likewise appointed physician in ordinary to Stanislaus, king of Poland, and duke of Lorraine. He died in 1784. The following is a catalogue of his writings. "*Histoire de la Maladie singulière, et de l'examen d'une femme devenue en peu de tems contrefaite par un ramollissement general des os,*" Paris 1752. "*Nouvelle description des grottes d'Arcy,*" Lyons 1752. "*Lettre a M. le Roi au sujet de l'Histoire de la femme Suppiot,*" Par. 1753. Suppiot was the woman affected with the softening of the bones, described in the foregoing memoir. "*Eclaircissement abrégé sur la Maladie d'une fille de St. Geosme,*" and "*Recueil pour servir d'eclaircissement, &c.*" relating to the same subject, Paris 1754. "*Lettre sur l'Instrument de Roonhuyzen,*" 1755. "*Lettre sur la qualité des Eaux de Luxeuil en Franche Comté,*" published in the *Journal de Verdun*, March 1756. "*Mémoire sur les Eaux Thermales de Bains en Lorraine, &c.*" in the *Journal de Medecine*, tom. vi. 1757. "*Du Charbon de terre et de ses Mines,*" fol. 1769. This forms the fortieth number of the arts described by the Academy of Sciences. Coal was then little known in France, and Morand took a journey to Liege, for the purpose of examining the mines; and in 1770 published his "*Mémoire sur la nature, les effets, propriétés, et avantages du charbon de terre, apprêté pour être employé commodément, économiquement, et sans inconvénient au chauffage, et a tous les usages domestiques.*" He also wrote an "*Eloge*" of his father, and a "*Mémoire sur la qualité dangereuse de l'emetique des Apothecaires de Lyons.*" Eloy Dict. Hist. Gen. Biog.

MORAND, PETER DE, a poet and dramatic writer, was born at Arles in 1701, and at a very early age he displayed talents for poetry, which gained him considerable reputation. Being disappointed in his marriage he devoted himself to a life of dissipation, and to the literary profession. He wrote two tragedies, of which one was very successful, but the other failed. One of his most popular pieces was a comedy,



a comedy, entitled "L'Esprit de Divorce." In 1749, he was nominated literary correspondent of the king of Prussia, an office which he held only a few months. "He was," says his biographer, "equally unlucky in marriage, love, on the stage, and in play, and to complete the list of misfortunes he died in the very year (1757,) at the close of which all his debts would have been paid, and he would have been in possession of a decent income." His works were published collectively in three vols. 12mo. Moreri.

MORANKER, in *Geography*, a town of Hindoostan, in the circar of Aurungabad; 15 miles N. of Aurungabad.

MORANO, a town of Naples, in Calabria Citra; 10 miles W. of Cassano.

MORANT, PHILIP, in *Biography*, an ingenious antiquary and divine, was born in the island of Jersey, and educated at Pembroke college, Oxford. He became rector of Aldham, in Essex, and was appointed by the house of Peers, to prepare the votes of parliament for the peers. He was employed in this work at the time of his death, which happened in 1770. He edited several works, and wrote a history of Colchester; the history of Essex; and those lives in the *Biographia Britannica* which are marked C.

MORANT Bay, in *Geography*, a bay of the island of Jamaica, on the S. coast. N. lat.  $17^{\circ} 54'$ . W. long.  $76^{\circ}$ .

MORANT Keys, a cluster of small islands, or rather rocks, about 36 miles S.E. of Jamaica. N. lat.  $17^{\circ} 35'$ . W. long.  $75^{\circ} 40'$ .

MORANT Point, the most easterly promontory of the island of Jamaica. On the N. side is a harbour of the same name. From Point Morant, it is usual for ships to take their departure, that are bound through the Windward Passage, or to any part of the W. end of the island of St. Domingo. N. lat.  $17^{\circ} 58'$ . W. long.  $76^{\circ} 10'$ . *Morant harbour* is about four leagues W. of Point Morant, at the S. coast of the island of Jamaica. Before its mouth is a small island, called "Good island," and a fort on each point of the entrance.

MORANT River, is two leagues W. of the W. point of Point Morant. The land here forms a bay, with anchorage along the shore.

MORAPA, a town of South America, in the province of Tucuman; 15 miles W. of St. Miguel de Tucuman.

MORARIA, CAPE, a cape of Spain, on the coast of Valencia. N. lat.  $38^{\circ} 40'$ . W. long.  $0^{\circ} 1'$ .

MORAS, a town of France, in the department of the Isere; 16 miles N.W. of La Tour du Pin.—Also, a town of France, in the department of the Drôme; 15 miles N. of Romans.

MORASS, a marsh, fen, or low moist ground, which receives the waters from above, without having any descent to carry them off again. The great modes of agricultural improvement on these lands, are those of complete draining, and the application of different kinds of consolidating substances.

Somner derives the word from the Saxon *mersc*, *lake*; Salmasius from *mare*, a *collection of waters*; others from *marisc*, of *maricetum*, a *mariscus*, i. e. *rushes*. See BOG, FEN, MARSH, SWAMP, &c.

In Scotland, Ireland, and the north of England, they have a peculiar kind of morasses, called *mosses*, or *peat-mosses*, whence the country people dig their peat or turf for firing.

The earl of Cromartie gives a particular account of these mosses in the *Philosophical Transactions*. They are covered with a heathy scurf, under which is a black, moist spongy earth, in some places shallower, in others deeper, ordinarily from three or four, to seven or eight feet depth, though in some few places twice or thrice as much.

VOL. XXIV.

This black spongy earth they cut into oblong squares, with iron spades made for that purpose, eight or nine inches long, and four or five broad: as the men cut them up, they are carried and spread on a dry ground, to be dried in the wind and sun. Some of these become harder, some softer, according to the nature of the mould or earth: the more black and solid they are, the better fire they make; and those are the least esteemed which are greyest, lightest, and moist spongy.

When they have cut off one surface of four or five inches deep, they proceed downwards to another, and so to a third and a fourth, till they come to the hard strata; unless they be stopped with water, which they also ordinarily remove by making a channel, if they can; but where they cannot, there the water stagnates. In such wasted pits, or *peat-dikes*, as they call them, where water hinders the cutting the spongy earth to the bottom, the pits will be filled up again, in some years, with a new spongy earth; which, in process of time, comes to the consistence of peat-moss, as at first, and a scurfy heathy turf grows over the top of it. When the dykes are dug down to the hard channel, the mosses do not renew, as in the other case; though it has been observed, that if they be cut down to the channel, provided the heathy turf cut off from the top be but laid on the channel, in course of time the moss grows again. These mosses are always level; though they are frequently found on hills, and near the tops of them too; yet, as that curious nobleman observes, the mosses have always a descent to them, and generally from them; inasmuch that he never knew any where the water might stagnate. It is the water draining from above, that seems to be the parent of the peat. In many of these mosses are found quantities of fir and oak-wood, usually in whole trees; but the smaller branches are seldom found unconsumed. The wood is as good for use as any old wood is; only that, having imbibed a deal of moisture, it takes some time to dry, in order to fit it for burning.

There are many places where wood will not grow, where yet the mosses are well stocked with this under-ground timber; but yet it appears there must have been woods formerly there; else how came they in the mosses? To prove this, that noble lord gives us the history and origin of a moss, in great measure from his own experience. In the parish of Lochburn, in the year 1651, he saw near the top of a very high hill, a plain about a mile over, then covered with a firm standing wood, but which was so very old, that not only the trees had no leaves or bark on, but the outside, for the space of an inch inwards, was dead white timber, though within they were firm. Coming by the place fifteen years after, he could not discover the least appearance of a tree; but, instead thereof, there was a plain green ground covered with a moss; the trees being all fallen, and having lain so thick over one another, that the green had over-run the whole timber, by means of the moisture draining from the hill above it, and stagnating on the plain. He adds, that none could pass over it; the scurf not being firm enough to support them. In thirty years more he found this whole piece of ground turned into a common peat-moss, and the country people digging turf and peat there. This accounts for the generation of mosses, and whence it is that many of them are furnished with timber.

It appears from the whole, that all the trees which we find in this fossil state, originally grew in the very places where we now find them, and have only been thrown down and buried there, not brought from elsewhere. It may appear indeed an objection to this opinion, that most of these fossil trees are of the fir kind; and that Cæsar says, expressly, that no firs grew in Britain in his time; but this is

T easily



easily answered by observing, that these trees, though of the fir kind, yet are not the species usually called the fir, but pitch-tree; and Cæsar has no where said that pitch-trees did not grow in England. Norway and Sweden yet abound with these trees, and there are at this time whole forests of them in many parts of Scotland, and a large number of them wild upon a hill at Wareton in Staffordshire, to this day.

In Hatfield-marsh, where such vast numbers of the fossil trees are now found, there has evidently once been a whole forest of them growing. The last of these was found alive, and growing in that place within a hundred years last past, and cut down for some common use. See *Bog-Wood*.

The Roman historians tell us, that when their armies pursued the wild Britons, these people always sheltered themselves in the miry woods, and low watery forests. Cæsar expressly says this, and observes, that Cassibelan and his Britons, after their defeat, passed the Thames, and fled into such low morasses and woods, that there was no pursuing them; and we find that the Silures secured themselves in the same manner when attacked by Ostorius and Agricola. The same thing is recorded of Venutius, king of the Brigantines, who fled to secure himself in the boggy forests in the midland part of this kingdom; and Herodian expressly says, that, in the time of the Romans pushing their conquests in these islands, it was the custom of the Britons to secure themselves in the thick forests which grew in their boggy and wet places, and when opportunity offered, to issue out thence and fall upon the Romans. The consequence of all this was, the destroying all these forests, the Romans finding themselves so plagued with parties of the natives issuing out upon them at times from these forests, that they gave orders for the cutting down and destroying all the forests in Britain which grew on boggy and wet grounds. These orders were punctually executed; and to this it is owing, that at this day we can hardly be brought to believe that such forests ever grew with us as are now found buried.

The Roman histories all join in telling us, that when Suetonius Paulinus conquered Anglesea, he ordered all the woods to be cut down there, in the manner of the Roman generals in England; and Galen tells us, that the Romans, after their conquest in Britain, kept their soldiers constantly employed in cutting down forests, draining of marshes, and paving of bogs. Not only the Roman soldiers were employed in this manner, but all the native Britons made captives in the wars, were obliged to assist in it: and Dion Cassius tells us, that the emperor Severus lost no less than fifty thousand men in a few years time, in cutting down the woods and draining the bogs of this island. It is not to be wondered at, that such numbers executed the immense destruction which we find in these buried forests. One of the greatest subterranean treasures of wood is that near Hatfield; and it is easy to prove that these people, to whom this havock is thus attributed, were upon the spot where these trees now lie buried. The common road of the Romans out of the south into the north, was formerly from Lindum (Lincoln) to Segelochum (Little-Burrow upon Trent), and from thence to Danum (Doncaster), where they kept a standing garrison of Crispinian horse. A little off on the east, and north-east of their road, between the two last named towns, lie the borders of the greatest forest, which swarmed with wild Britons, who were continually making their sallies out, and their retreats into it again, intercepting their provisions, taking and destroying their carriages, killing their allies and passengers, and disturbing their garrisons. This at length so exasperated the Romans, that they were determined to destroy it; and to do this safely and ef-

fectually, they marched against it with a great army, and encamped on a great moor not far from Funningly: this is evident from their fortifications, yet remaining.

There is a small town in the neighbourhood called Osterfield, and as the termination *field* seems to have been given only in remembrance of battles fought near the towns whose names ended with it, it is not improbable that a battle was fought here, between all the Britons who inhabited this forest, and the Roman troops under Ostorius. The Romans slew many of the Britons, and drove the rest back into this forest, which at that time overspread all this low country. On this the conquerors, taking advantage of a strong south-west wind, set fire to the pitch-trees, of which this forest was principally composed; and when the greater part of the trees were thus destroyed, the Roman soldiers and captive Britons cut down the remainder, except a few large ones, which they left standing, as remembrances of the destruction of the rest. These single trees, however, could not stand long against the winds; and these falling into the rivers which ran through the country, interrupted their currents, and the water, then overspreading the level country, made one great lake, and gave origin to the mosses, or moory bogs, which were afterwards formed there, by the workings of the waters, the precipitation of earthy matter from them, and the putrefaction of rotten boughs and branches of trees, and the vast increase of water moss, and other such plants which grow in prodigious abundance in all these sorts of places. Thus were these burnt and felled trees buried under a new-formed spongy and watery earth; and afterwards found on the draining and digging through this earth again.

Hence it is not strange, that Roman weapons and Roman coins are found among these buried trees; and hence it is that among the buried trees some are found burnt, some chopped and hewn; and hence it is that the bodies of the trees all lie by their proper roots, and with their tops lying north-east, that is, in the direction in which a south-west wind would have blown them down. Hence also it is, that some of the trees are found with their roots lying flat, these being not cut or burned down, but blown up by the roots afterwards when left single; and it is not wonderful that such trees as these should have continued to grow even after their fall, and shoot up branches from their sides, which might easily grow into high trees. Phil. Trans. N<sup>o</sup> 275.

By this system it is also easily explained why the moor-soil in the country is in some places two or three yards thicker than in others, or higher than it was formerly, since the growing up of peat-earth or bog-ground is well known, and the soil added by overflowing of waters is not a little.

As the Romans were the destroyers of this great and noble forest, so they probably were also of the several other ancient forests; the ruins of which furnish us with the bog-wood of Staffordshire, Lancashire, Yorkshire, and other counties. But as the Romans were not much in Wales, in the Isle of Man, or in Ireland, it is not to be supposed, that forests cut down by these people gave origin to the fossil wood found there; but though they did not cut down these forests, others did; and the origin of the bog-wood is the same with them as with us.

Holingshed informs us, that Edward I., not being able to get at the Welsh, because of their hiding themselves in boggy woods, gave orders at length that they should be destroyed by fire and by the axe; and doubtless the roots and bodies of trees found in Pembrokeshire under ground, are the remains of the execution of this order. The fossil wood in the bogs of the Isles of Man and Anglesea, is doubtless of the same origin; though we have not any accounts extant of the time or occasion of the forests there being destroyed; but



but as to the fossil trees of the bogs of Ireland, we are expressly told, that Henry II., when he conquered that country, ordered all the woods to be cut down that grew in the low parts of it, to secure his conquests by cutting away the places of resort of rebels.

We have an account in the Philosophical Transactions of a moving moss, near Church-town, in Lancashire, which greatly alarmed the neighbourhood as miraculous. The moss was observed to rise to a surprising height, and soon after sunk as much below the level, and moved slowly towards the south.

MORASTEEN, in *Geography*, a town of Sweden, in the province of Upland; 8 miles S.E. of Upsal.

MORAT, or MURTEN, a bailliage of Switzerland, belonging to Bern and Friburgh; into which the reformation was introduced in 1530, by a majority of voices, in preference of deputies from Bern and Friburgh.—Also, the capital of this bailliage, which stands pleasantly upon the edge of a small lake, about six miles long and two broad, in the midst of a well cultivated country. The lakes of Morat and Neuchatel are parallel to each other, and separated only by a ridge of hills: the former is the most elevated, for it discharges itself by means of the river Broye, into the lake of Neuchatel. According to M. de Luc, it is fifteen French feet above the level of that of Neuchatel. Both these lakes, as well as that of Bienné, formerly extended much farther than their present limits; and, from the position of the country, appear to have been once united. Morat is celebrated for the obstinate siege sustained against Charles the Bold, duke of Burgundy, which was followed by the battle of Morat, fought on the 22d of June, 1476. In this famous engagement the duke was routed, and his whole army almost destroyed by the confederate troops of Switzerland. Not far from the town, and adjoining to the high road, was erected a monument of this victory; which was a square building, filled with the bones of the Burgundian soldiers, who were slain at the siege and in the battle. In March 1798 the French troops demolished this ossuary. Morat is 12 miles W. of Berne. Coxe's Travels, vol. ii.

MORATA, OLYMPIA FULVIA, in *Biography*, an Italian lady, was born at Ferrara in 1526. Her father was a learned professor, and gave her an excellent education. She became tutress to the princeess of Ferrara, and declaimed publicly in Latin and Greek. Olympia married Grunthler, professor of medicine at Heidelberg, where she died in 1555. Her works, consisting of orations, letters, dialogues, and translations, were printed at Basle in 1562, 8vo.

MORATA, in *Geography*, a small island in the bay of Honduras, near the E. coast of Ruatan. N. lat. 16° 25'. W. long. 86° 58'.

MORATALAZ, a town of Spain, in New Castile; 22 miles E. of Ciudad Real.

MORATALLA, a town of Spain, in Murcia; 34 miles S.S.W. of Chinchilla.

MORATUR, or DEMORATUR, in *Law*, signifies as much as, *he demurs*; that is, the party here goes not forward, but rests or abides by the judgment of the court, who take time to deliberate, argue, and advise thereon.

When the counsellors of the party are of opinion that the count or plea of the adverse party is insufficient in law; then he demurs, or abides in law; and refers the same to the judgment of the court. See DEMURRER.

MORAU, in *Geography*, a river of Austria, which gives name to Moravia, rises in the Sudetic mountains; and passing by Olmutz, joins the Danube not far to the W. of Presburg.

MORAVA, a town of Servia, on a river of the same

name, which was the ancient Margus, and runs about 200 miles into the Danube. Morava is six miles N.W. of Pakin.

MORAVAHISAR, a town of European Turkey, in Servia; 40 miles N.N.W. of Nissa.

MORAVIA, *Marquisate of*, a country bounded on the N. by Bohemia and Silesia, on the E. by Silesia and Hungary, on the S. by Austria, and on the W. by Bohemia; containing about 1400 square miles. On the side of Hungary, Bohemia, and Silesia, it is partly environed by mountains, and partly by woods. One-half of it is mountainous and woody; and in the more champaign circles and tracts are many morasses, bogs, and lakes. In the former part the temperature is cold, and requiring even a stove in summer; and yet it is more salubrious than the other even level districts. The country produces more corn than the inhabitants consume, hemp and flax, and good saffron, and also fruit-trees and vegetables, besides vines that yield white and red wines. It has good pasturage for all sorts of cattle, and plenty of game. Here are also wolves, bears, and leopards; quarries of marble, and other minerals, such as those of alum, iron, sulphur, saltpetre, and vitriol; and springs impregnated with those minerals. The number of market-towns and villages in Moravia has been estimated at 2550. The language of the country is a dialect of the Slavonic; but the German is very common. The states of the country consist of the clergy, lords, knights and burghesses. Christianity was introduced here about the middle of the 9th century: the prevalent profession is that of the Romish church, subject to the jurisdiction of the bishop of Olmutz. The articles of commerce consist of manufactures of cloth, iron, glass, pepper, gunpowder, &c. which, on the whole, are considerable. Till the 9th century, the kings of this country, anciently inhabited by the Quadi, and afterwards by the Selavi, were powerful and independent; but in the time of Charlemagne they became his vassals. In 1086 Moravia was declared a marquisate, and united with Bohemia. The whole marquisate is divided into six circles, each of which has its captain, whose authority extends to the quartering, marching, and maintenance of the soldiers. The capital is Olmutz.

MORAVIAN, or BOHEMIAN Brethren, in *Ecclesiastical History*, were Protestants of Bohemia, who, in the 15th century, threw off the despotic yoke of Rome, animated by the zealous exhortations and heroic example of John Huss. These Moravian brethren were distinguished by several religious institutions of a singular nature, and well adapted to guard their community against the reigning vices and corruptions of the times. In 1552, they united themselves to the Lutheran churches in Saxony; but after the death of Luther, and their expulsion from their country in 1547, many of them, who retired into Poland, embraced the religious sentiments and discipline of the reformed; and by degrees they all entered into the communion of the Swiss church. This union was, at first, formed on the express condition, that the two churches should continue to be governed by their respective laws and institutions, and should have separate places of public worship; but, in the following century, all remains of dissension were removed in the synods held at Aistrog in 1620 and 1627, and the two congregations were formed into one, under the title of the "Church of the United Brethren." From this honourable origin the modern Moravians are ambitious to derive their descent. See HERRNUTTERS and UNITAS Fratrum.

MORAWEN, in *Geography*, a town of Bohemia, in the circle of Chrudim; 6 miles N.E. of Chrudim.



MORAWICA, a town of Poland, in Volhynia; 18 miles S.E. of Lucko.

MORAYA, a town of Peru, in the diocese of La Plata; 70 miles E. of Lipes.

MORAYSHIRE, or the county of Elgin, one of the northern counties of Scotland, is bounded on the N. by that branch of the German ocean called the Moray-Frith; on the E. and S.E. by Banffshire; on the S.W. by Invernessshire; and on the W. by that county, and by Nairn. The figure of this shire is extremely irregular, being in several places intersected by districts of the counties which form its boundaries. It extends in length from N. to S. about 42 miles; and in average breadth, from E. to W., about 20. In ancient times the limits of this county were much more extensive than at present, comprehending all that tract of country which lies between the river Spey on the E. parts, the Farar or Beaulie on the N.W., and the northern confines of Argyleshire on the W. When this larger county was subdivided, and its name confined to the present extent, is uncertain, but that event most probably took place at a period later than the tenth century, as the "district" or "province" of Morayshire is frequently mentioned by writers in their reference to a subsequent era.

This county is naturally divided into two portions; the one called the Lowlands, and the other Brae-Moray. The former of these, lying along the sea-shore, and comprehending an extent of 200 square miles, is a fine champaign country, though diversified by many gently rising grounds; which being either covered with trees, or in a state of high cultivation, form a landscape, in general much superior in beauty, fertility, and riches to any northward of the Grampian hills. The latter, comprising about 600 square miles, and constituting the upper or southern division, is, on the contrary, a mountainous country, intersected by several fertile vallies along the banks of the different streams, which take their rise in, or flow through it. This district, particularly its uppermost portion, is chiefly occupied by extensive forests of different kinds of trees, but the fir and the oak are most prevalent.

The soil and climate of Morayshire, as in most counties of similar extent, surface, and position, are various. The Lowlands in general participate in the fair weather which is found to prevail over the whole eastern coast of Scotland. Indeed in that respect this district is peculiarly favoured by its situation, as lying between the mountains of Sutherland on the one side, and those of Banff and Aberdeen on the other. For the clouds borne aloft on the winds pass from the one range to the other, with great rapidity over the subjacent plain, which affords no object sufficiently high to attract or impede their course. The proximity of the sea prevents the snow from remaining on the ground for any lengthened period of time; and is, likewise, the cause of its seldom falling in very considerable quantity. In short, these circumstances combine to render the climate here more mild and favourable, than probably occurs in any district of Europe under the same latitude. The hilly part of the county has a climate of a much ruder description. Winter commences here earlier than in the Lowlands, and lingers a month or five weeks later.

In the maritime district the great proportion of the soil is a rich deep clay, which, if under proper management, would equal in fertility the similar soil of the Carse-of-Gowrie. The surface of the remainder of this level consists principally of a deep black loam, or of a light and sandy soil. That in the vallies of the hilly parts is formed chiefly by the washings of the streams; and where cultivation has taken place, on the sides of the hills, the soil is

of a moorish quality, and more or less blended with moss. The sandy soil is greatly intermixed with gravel and large pebbles.

On the subject of agriculture, it may be observed, that its condition in this county varies with the changes of soil and climate, which its different portions exhibit. Wheat is raised only in the lower district; but oats, barley, peas, and beans, potatoes, turnips, and artificial grasses, are prevalent over the whole cultivated extent of the shire. No fixed rotation of crops seems to be adopted, though in all the larger farms a certain portion of land is annually fallowed; some laid down with turnips, and some with grass. In Strathspey, one-half of the lands is usually under oats, and on the remaining half is grown a considerable portion of grass, with small quantities of beans, peas, turnips, and potatoes. Lime, either manufactured in the county, or imported from the Frith of Forth, or from England, is much employed as a manure. The most extensive farms here contain from a hundred to a hundred and fifty acres of arable land; but farms in general have seldom more than thirty or forty acres under tillage. In Strathspey they are of much greater extent for the most part than in the low country, owing to the circumstance of their having been formerly wadsetted, or pledged for debts by the family of Grant; for though the wadsets are redeemed, yet the farms mostly continue in the hands of the descendants of their ancient possessors. Farm-houses, in the Lowlands, where the farms are of tolerable extent, make, in general, a respectable appearance; but the dwellings of the poorer tenants are extremely mean. The farm-servants are usually maintained in the family; "the ordinary breakfast being porridge made of oatmeal, which is ate warm with milk or small beer: for dinner a kind of flummery, called sowens, is made from the bran of oatmeal, and ate chiefly with milk; and for supper, greens or cabbage, either cut small, or mashed, and afterwards boiled with an addition of oatmeal and salt; and at each meal there is an addition of bread made from a mixture of oats, bean and peas-meal. On Sundays and other holidays the dinner is broth, made of pot-barley with greens, or roots and butchers' meat."

The chief plantations in the lower portions of this county are the property of the earl of Fife and the heirs of the late earl of Finlater. These consist of various sorts of forest trees. In Strathspey there are very extensive forests of Scottish fir on the estates of Grant of Rothiemurchus, the duke of Gordon, and sir James Grant. The forest of Glenmore, which has been mostly cut down within these last twenty-six years, afforded many trees fit to be used as masts for vessels of a considerable size, and some even suitable for the royal navy.

The principal rivers of this county are the Findhorn, the Spey, and the Lossie. The Findhorn rises in Invernessshire, and after a course of nearly fifty miles, in a northeasterly direction, falls into the Moray Frith at the harbour of Findhorn; the Spey likewise rises in that county, and flows into the ocean at Gairmouth, forming, for a considerable extent, the boundary between Morayshire and Banffshire. The Lossie takes its rise in the hills between Dollas and Strathspey, in the upper district, and discharges its waters into the Frith at Lossiemouth. Several rivers of inferior size unite with each of these larger ones during their current through this county. Of the lakes here, loch Spynie is the only one deserving of notice. It is about three miles long and one broad, and appears to have been an arm or branch of the sea, though now shut up by a considerable extent of valuable land. This lake abounds with pike and perch, and is much frequented by swans.

Moray-



Morayshire does not contain any metallic veins, at least none have yet been discovered. Fire-stone, grey-slate, and limestone, however, are found in great abundance. In the district of Rothemurhus is a vast mountain of the latter, which is calcined with wood, and chiefly employed as a manure. A rock of fine agate appears on the side of a hill near the church of Rothies. It is very hard, heavy, of a smooth uniform texture, and of considerable brightness, the red being remarkably clear and finely shaded through the stone. Mr. Williams, the mineralogist, says, this is "the largest and most beautiful agate rock he ever saw, and is so fine and hard as to be capable of the highest lustre in polishing."

The only mineral springs in the county are those in the parish of Duthil, which have been long esteemed for their medicinal properties in urinary complaints, and are supposed to resemble the Seltzer waters in containing fixed air.

Numerous interesting remains of antiquity are found in different parts of Morayshire. Elgin is distinguished by the ruins of an ancient cathedral, originally built by bishop Murray, whose episcopal seat was translated hither from Spynie in the year 1224. Having been burnt to the ground, however, in 1399, by Alexander Stewart of Badenoch, it was refounded by bishop Barr. (See ELGIN.) The remains of Pluscardine abbey stand on the north side of the river Lossie, six miles to the south-west of Elgin. This monastery was founded, by king Alexander II., in the year 1230, and dedicated to St. Andrew. The religious were monks of Valles Caulium, a reform of the Cistercians following the rule of St. Bennet, and were brought hither by William Malvoisin, bishop of St. Andrews, from the diocese of Langres, in France. From the appearance of the ruins, this institution seems to have been one of considerable extent and riches. On the south bank of loch Spynie are the ruins of the ancient palace of the bishops of Moray, which is said to have been one of the most magnificent episcopal seats in Scotland. Lochindorb castle, in the parish of Edinkillie, has evidently been a place of great strength. Catharine de Beaumont, widow of David de Hastings, earl of Athol, was blockaded here during the captivity of king David Bruce, by sir Andrew Moray the regent. Edward III., however, saved her from falling into his hands, by compelling him to raise the siege the year following, when he marched his army so far north as Inverness, with the view of enforcing the submission of the whole kingdom. The present remains of this castle cover a space of ground not less than 100 yards square. Near this fortress are the vestiges of another, called Doune-hill, which appears to be of more ancient date than the former; and was probably one of the strong holds to which the inhabitants retired with their cattle upon the invasions of the Danes, Norwegians, or Islanders. It is situated on a conical mount, defended on the one side by the deep rocky channel of the rapid river of Dwie, and on the others by an immense fosse or ditch, with a strong rampart on the outside, mostly composed of stones, some of which are apparently vitrified. About a mile higher up the river stands the castle of Dumphail, long the property of the family of Dunbar; and in the parish of Dyke is that of Darnaway, the venerable mansion of the earls of Moray, of the Randolphs, the Danbars, the Douglasses, and the Stuarts, all names of much note in the page of history. The grand hall in this castle, built by Thomas Randolph, regent of Scotland during the minority of king David Bruce, is by much the oldest and most remarkable part of the buildings; and measures 89 feet in length by 35 in breadth. In the parish of Duffus may be discovered traces of some ancient military works, which are attributed to the Danes. The spot on which they are situated is called

the Burgh; and is supposed to be the real site of the fortresses mentioned by Buchanan, as having been surrendered to the Danes upon the defeat of Malcolm II. At the western extremity of the parish is an obelisk or stone cross, conjectured to be the same which was erected to commemorate the rout and dispersion of the forces of Canute by the same monarch in the pursuit of the Danes, after the victory of Panbride, in Angus. The village of Duffus is further remarkable for a square, in the centre of which stands the church, surrounded by four streets regularly paved, the workmanship of Oliver Cromwell's soldiers. Many other curious monuments of antiquity are still visible in different parts of this county, among which Swino's stone, or pillar, on the road from Nairn to Forres, particularly demands attention. This stone is universally allowed to exceed in ornamental workmanship all the other obelisks in Scotland; and is even generally supposed to be the finest monument of the kind now existing in Europe. Its height above ground is not less than 23 feet, and it is said to sink twelve beneath it. Its breadth is about four feet. The portion above the surface of the ground is visibly divided, on the E. side, into seven compartments, containing a variety of basso-relievos, representing military figures. On the other side is displayed a sumptuous cross, and under it appear two personages in the attitudes of reconciliation. It is remarkable that no distinct tradition concerning this obelisk has reached the present period; hence its origin and intention are doubtful, but it is usually supposed to have been erected in memory of the peace concluded between Malcolm and Canute, upon the final retreat of the Danes from Scotland.

Morayshire, according to the parliamentary returns of 1801, contained 6126 houses, and 26,705 inhabitants, viz. 11,763 males, and 14,942 females. Of this number, 8131 are employed in agriculture, and 4410 in the different departments of trade and manufacture. Pennant's *Tours in Scotland*. Chalmers' *Caledonia*. Beauties of Scotland, vol. iv. Antiquities and Scenery of the North of Scotland, by the Rev. Charles Cordner, 4to.

MORBEGNO, a town of Switzerland, the handsomest in the Valteline, lies on the left side of the Adda, at the foot of the southernmost chain of mountains. It has more shops and carries on more trade than all the others united. It is the residence of a bailiff, who bears the title of Podesta; 11 miles S.E. of Chiavenna. See VALTELINE.

MORBEN, a mountain of Scotland, in the county of Perth; 12 miles W.S.W. of Crieff.

MORBEYA, a river of Morocco, which runs into the Atlantic, near Azamor.

MORBID, from *Morbus*, *disease*, is applied, in medical language, to every thing connected with disease; thus we say morbid secretion, morbid poison, morbid structure, and even morbid anatomy; meaning by the last the anatomical investigation of those changes in the organs of the body, which disease has left behind it, when fatal.

MORBID *Poison*. This term was first invented by Mr. Hunter to make a necessary distinction between those secretions by which animals in a state of health are able to injure others; and those which no animal possesses but in a morbid or diseased state. When the viper inflicts his venom, however deleterious it may be, he is himself in health, and the higher that health, the stronger will his venom prove. But the small-pox is always a diseased action in the person who communicates, as well as in the person who is affected by it. This distinction, important as it must appear, as soon as proposed to the understanding, was overlooked long after Mr. Hunter had pointed it out, and is scarcely yet vernalized even among medical men.

The



## MORBID POISON.

The earlier writers on the subject of poisons, seemed to have taken Celsus as their model, who was acquainted with no morbid poison but the hydrophobia. It is not to be wondered if that accurate writer should have placed in succession *morsus rabiosi canis, morsus serpentum, idus aspidum, aranei, scorionis, &c.* and afterwards *venena vel in cibo vel in potione assumpta*. But it is less excusable that Mead, in a Treatise on Poisons, should have made no other distinction between poisons, than from the kingdom of nature from which they are derived, or from their property of injuring by being applied to the stomach, or externally by a wound.

Mr. Hunter's distinction might have been of less importance, had not the former incorrectness considerably influenced the practice of those who were misled by their own terms. Thus, when it was found that mercury was a remedy against the venereal poison, it was soon considered as an antidote; and as the principal medical industry of the ancients had been directed to the discovery of antidotes, it was presently conceived that mercury might be applied in all cases of poisons.

But the great advantage which medicine has derived from Mr. Hunter's distinctions is, that it has led to an accurate discrimination between the laws of different animal poisons, and to a more correct mode of ascertaining the characters of each of the various morbid poisons. In these views we shall now proceed with the article before us.

Mr. Hunter called those poisons which form a part of the animal when in health "the natural poisons." Dr. Adams prefers the term "original poisons," inasmuch as both these and the "morbid" are processes of nature, but the first only are secretions of the animal in his original or unaltered condition. This then marks the first distinction. The second, and not less important, is, that an animal affected by an original animal poison has no power of communicating a similar disease to another; whereas one affected by a morbid poison acquires all the properties of injuring in a similar way, and communicates the same property to such as are poisoned by him. An animal bitten by a serpent has no power of communicating a similar morbid influence by his own bite; but many animals bitten by a rabid dog have the power of communicating a similar effect to other animals of their own, and even of different species and orders.

The original and morbid poisons affect locally or constitutionally, and sometimes in both ways. But there is one important distinction, namely, that an animal may remain susceptible of the effect of the original poisons if he survives the disease excited by them; whereas, as far as morbid poisons have been traced, no constitutional effect can be a second time excited by the same poison in the same subject. If this provision had not been made against those poisons which affect by effluvia, such as the small-pox, the constant apprehension of disease from sources from which we could never protect ourselves, would have rendered life so precarious as to be scarcely worth acceptance.

Mr. Hunter divided the morbid poisons into the simple and compound. The simple are those which affect locally or constitutionally, but not both ways; those which affect locally and constitutionally he called compound. There is some difficulty in marking this distinction, because there are few, if any, which may not be called compound, and there are some which are occasionally simple and at other times compound. Thus, the venereal disease, which Mr. Hunter uses as an illustration of a compound, is more commonly a simple poison, affecting only the parts to which it is applied. The cow-pox, in like manner, is generally only a simple poison, but sometimes affects distant parts of the body; and the

small-pox, which for the most part affects the whole, is sometimes confined to the inoculated part. On this account Dr. Adams has preferred the division into such as produce their effect by contact or effluvia, or both. The venereal poison is never found to produce its effect but by application in a substantial form. The cow-pox is of the same description. The measles, on the contrary, are with difficulty, if at all, communicated but by effluvia, and the small-pox may be communicated by either one or the other. We have thought it right to mention these distinctions, though to us neither of them appears of sufficient importance for any practical purposes.

Mr. Hunter was of opinion that the morbid poisons are for the most part of recent date. It is certain, that excepting hydrophobia, they are not to be traced in the writings of the ancient physicians. He imputed them to some accidental intercourse between animals of the same or different species; and conceived that when such a cause has induced only a local disease on a part not likely to be applied to another animal, the effect has probably ceased with the animal which has been first injured. But if the disease could be communicated by effluvia, it would spread as long as that effluvia was inhaled by animals susceptible of its impression; hence the almost universality of small-pox. Or if its local effects were produced on parts of animals often brought into contact and not exposed to fight, the communication of such a disease would be as general as such intercourse was promiscuous. Hence the rapid spread of syphilis among such as are unconstrained by the laws of chastity.

The only work which Mr. Hunter has left us on morbid poisons, is his celebrated Treatise on the Venereal Disease. In this work, by his happy talent of discrimination, by his unwearied industry, which was only equalled by his accuracy, he at length ascertained the true character of a disease, till his time supposed to be confined by no laws, and hence termed a *proteiform complaint*. By the use of this convenient term many other obstinate local diseases were so confounded by former writers, that at last it was suspected an individual or even a family once infected could never with any certainty be considered as pure. All this erroneous mode of reasoning, if it could be called reasoning, Mr. Hunter effectually overturned, by ascertaining the true character of syphilis, (see *LUES Venerea*.) the manner in which it is cured, the chances of its occurrence afterwards in distant parts of the body, the means of curing it in each, and the causes which for a time might interfere with, or render ineffectual the only certain remedy. Besides the ignorance of his predecessors on most of these points, another fruitful source of error to themselves, and of consequent misery to their patients, was the mistaking other morbid poisons for the venereal, merely because they appeared in parts most liable to the latter. Of these he gave several instances in the nipples from suckling, the gums from the transplantation of teeth, and in those organs which are the usual seat of the disease. Cases of each he describes with great accuracy under the term "*diseases resembling the lues venerea*," and concludes this invaluable present to posterity with the following paragraph: "I cannot conclude," says he, "without intimating that undescribed diseases resembling the venereal are very numerous; and that what I have said is rather to be considered as hints for others to prosecute the inquiry further, than as a complete account of the subject."

Such is the last paragraph of Mr. Hunter's second edition, published in the year 1788. Though he lived till the latter end of 1793, he never brought the subject again before the public, nor even troubled himself with answering the numerous



merous objections, which we may suppose, appeared to doctrines at that time so new and so contrary to generally received opinions.

In the beginning of 1795, appeared the first edition of Dr. Adams's Treatise on Morbid Poisons, the title of which shewed that it was principally directed to the inquiry which Mr. Hunter had left for others to prosecute. After vindicating his master from the attacks of every author who had opposed or misrepresented him, Dr. Adams attempts a methodical arrangement of all those appearances which had, till Mr. Hunter's time, been confounded with syphilis. In doing this, he very happily avails himself of an enumeration of all the ulcers, described by Celsus, on the parts usually exposed to the venereal poison. He shews that the above-mentioned author, who is admitted to have flourished more than a thousand years before this formidable disease was known, describes, with much accuracy, in his chapter *De obscurarum partium vitis*, nine forms of ulceration, all of which differ from the proper character of the venereal, as traced by Mr. Hunter, and even by Astruc, Boerhaave, and every other respectable writer; and that many of these ulcerations are mentioned by modern authors as forms of the venereal disease, which they found themselves unable to cure, and which they acknowledge were often exasperated by mercury. A reference to these writers serves him at once as an illustration of Celsus, and as a proof that diseases, described by that author, ought not to be confounded with one which is admitted by almost every writer to have arisen so long since his days.

Having disposed of this grand question, Dr. Adams makes the first attempt at something like a classification of morbid poisons from the local actions excited by them. These we shall offer in his own words.

"If this distinction," says he, "of morbid poisons may be admitted, it will resolve itself into the following division:

"1. Slough, with consequent fungus and scab, as in yaws.

"2. With suppuration and scab, as in small-pox.

"3. Preceded by ulcers and followed by immediate skinning, as in several anomalous morbid poisons.

"4. With ulceration, and each in succession, as in the sloughing phagedæna.

"5. Ulceration kept up by the secreting pus, as in siveus and some anomalous phagedæna.

"6. Slough, with a thickened edge and base, as in the venereal ulcer."

Such was the state of our progress towards an accurate discrimination of diseases so important, not only to medicine, but to the common intercourse of society, when Dr. Adams published his first edition. In this also was contained the first printed account of cow-pox, which was introduced in illustration of Mr. Hunter's suggestion, that the morbid poisons might originate by the intercourse of different species of animals. A few years afterwards, Dr. Jenner published his valuable discovery, and from that time the term morbid poison has been more generally adopted and understood.

In the year 1804, Mr. Abernethy published his "Classification of Tumours," with a number of cases, supposed to be venereal, though evidently arising from other causes. The hasty manner in which his work was compiled, prevented (as the author acknowledges) his marking, with sufficient accuracy, those discriminations by which the true might be distinguished from what he terms the *pseudo-syphilis*. His facts are, however, invaluable, and these he seems, by a kind of courtesy, to consign to the arrangement of Dr.

Adams, or to any one who might find leisure and diligence to pursue the subject methodically.

Three years afterwards appeared Dr. Adams's second edition of Morbid Poisons, improved by all that had been offered by other writers since his first, and most of all by the facts he had collected in the island of Madeira, in different parts of Great Britain, and even by experiments made on his own person. He was now able to give a clinical description of yaws and siveus, to trace the progress of the *acarus scabiei* in himself, and to mark the distinction between the disease it induces and the true itch. Thus was settled the long disputed point concerning the supposed cause of the itch, which some had imputed to an insect, the existence of which was denied by others. The confused notions also arising from the term elephantiasis, and the various diseases confounded under that general name, were accurately developed. (See the article ELEPHANTIASIS.) But what adds most to the value of Dr. Adams's researches, is their immediate application to practical uses, for though our knowledge may not yet be sufficiently mature to offer a name for every morbid poison as it may occur in practice, yet by the arrangement he has made we shall rarely be mistaken in the application of a remedy. To assist us in this respect, he has drawn our attention to the natural and artificial modes of cure in those morbid poisons, whose characters are now well ascertained, and has thus taught us to account for our occasional success, and too frequent failure in attempting to cure them all by mercury, merely from its constant efficacy in syphilis. Some, he describes, whose progress is slow and like the yaws, may be at any time suspended by mercury, but the consequence of this suspension is only the re-appearance of the disease in an aggravated form; others may, like siveus, be more rapid, and require to be instantly arrested by mercury, and many others may cease spontaneously, or yield to caustics, or other topical applications. From these considerations, more particularly the calamitous effects of giving mercury early in yaws, and many other morbid poisons, he concludes with advising, that that mineral should never be exhibited in the early stage of morbid poisons with which we are not well acquainted, unless the ulcerative process should be so rapid as to render it absolutely necessary to make every attempt at arresting its ravages.

We shall not offer any opinion on doctrines in many respects so new, and which certainly mark profound application, whether they may stand the test of future experience or not. But it is equally our duty and gratification to state one important result which seems to have arisen from these inquiries, and which we hope will be confirmed. None of our readers need be reminded that the Europeans have been accused of carrying a disease to the South Sea islands, which is said to have exterminated whole districts. It seems that by perusing the accounts of different writers, Dr. Adams had some years past not merely questioned the ravages from this disease in Otaheite, but even doubted whether it had ever appeared there at all. (See Dr. Adams's Edition of Mr. Hunter's Treatise on the Venereal Disease.) About ten years ago, Mr. Wilson, surgeon of the Porpoise sloop of war, arrived at Otaheite, strongly impressed with an apprehension of the prevalence of syphilis, and of the consequence to the health of his crew, who were destined to a much longer voyage. With this impression he examined all his men daily, and was very diligent in learning which of the natives were affected. In his inquiries he was greatly assisted by the missionaries, who spoke with much distress of the prevalence of this dreadful malady in the island. After examining



examining every subject, however, Mr. Wilson became satisfied that the disease which the Europeans were accused of importing did not then exist, and probably never had been known in Otaheite.

We have dwelt thus particularly on this last topic, first to remove the reproach from the English and French, who have mutually accused each other, and next to shew, by this single instance, how much the knowledge of disease has been improved by the accurate discrimination of morbid poisons.

MORBID, in *Painting*, is particularly applied to fat flesh very strongly expressed.

MORBIDERY, in *Geography*, a town of Hindoostan, in Canara; 13 miles N. of Mangalore.

MORBIHAN, one of the nine departments of the N.W. region of France, so called from the river or canal, which communicates with the sea from Vannes. This department was formerly Lower Bretagne, a maritime territory between Vilaine and Finisterre, in N. lat. 48°. It is bounded on the N. by the department of the North Coasts, on the E. by the department of the Ille and Vilaine, on the S.E. by the department of the Lower Loire, on the S.W. by the sea, and on the W. by the department of Finisterre. It contains 7067½ kilometres, or 328 square leagues, and 425,485 inhabitants. It is divided into four circles or districts, 37 cantons, and 231 communes. Its four circles are Pontivy, including 91,788 inhabitants; Ploermel, 88,504; L'Orient, 122,798; and Vannes, 122,395. According to Hassenfratz, it is divided into nine circles and 70 cantons, and contains 281,565 inhabitants. Its capital is Vannes. Its contributions in the year 11 of the French era, amounted to 2,327,248 fr., and its expences to 257,171 fr. 66 cents. The soil, though unequal, is fruitful, yielding grain, rye, flax, fruits, and excellent pastures. It has mines of lead and coal. Belle-Isle, belonging to this department, contains 5569 inhabitants, and is abundantly fertile. Houac and Hœdie are islets of little importance, inhabited by fishermen.

MORBILLI, in *Medicine*, an appellation given to the measles by the Italian physicians, signifying, as it were, a little plague; for *il morbo* (the disease) was, in their language, applied to the plague.

MORBUS, a term purely Latin, signifying *disease*; which see.

MORBUS *Arcuatus*. See JAUNDICE.

MORBUS *Cholera*. See CHOLERA.

MORBUS *Comitialis*. See EPILEPSY.

MORBUS *Coxarius*. See HIP-JOINT, *Diseases of*.

MORBUS *Gallicus*. See LUES VENEREA.

MORBUS *Hungaricus*. See HUNGARICUS *morbus*.

MORBUS *Prodromus*. See PRODROMUS.

MORBUS *Pedicularis*. See PHTHIRIASIS.

MORBUS *Regius*. See JAUNDICE.

MORBUS *Virgineus*. See CHLOROSIS.

MORCHELLA, in *Botany*, a name of Perfoon's, of whose derivation we can determine nothing. It seems made out of the English Morel, which Dr. Johnson by mistake refers to *Solanum*, mislaid, as it should seem, by the French name of the Nighthade, *Morelle*. Pers. Syn. Fung. 618. Class and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Eff. Ch. Cap elongated, round, cellular, not viscid. Volva none.

This genus is very properly separated by Perfoon from the *Phallus* of Linnæus and other writers, from which it differs no less in nature, than in the above essential characters. Instead of being of a short-lived watery texture, odiously fetid, and poisonous, it is of a leathery and permanent sub-

stance, eatable and of a delicious flavour; in every respect much nearer to *Helvella* than to any other genus.

Eight species are defined in the author above quoted. Of these the most important is

*M. esculenta*. Eatable Morel. (*Phallus esculentus*; Linn. Sp. Pl. 1648. Hudf. 629. Fl. Dan. t. 53. *Helvella esculenta*; Sowerb. t. 51.)—Cap contracted at the base. Stalk nearly solid.—Found in dry woods, and hedge bottoms, especially in retired and rather mountainous spots. It is said to spring up abundantly where trees have been burnt down, which was formerly practised in Germany, by those who collected this fungus for profit, till the method was forbidden by law. The eatable Morel has a thick stalk, of a pale buff or dirty white, an inch or two high. The head or cap is cellular, like a honey-comb, or like the second stomach of an ox turned inside out; (see MAMMALIA;) its colour an uniform brown, more or less pale, or greyish, in different individuals. This fungus is readily dried, and may be preserved for months, or even years. Its use is to give flavour to sauces and soups, rather than as a dish by itself.

The central figures, in Sowerby's plate, are considered by Persoon as a distinct species, and called

*M. patula*. Open Morel.—Cap open and spreading at the base; its cells rhomboid. Stalk hollow. Found with the former.

The late M. Ventenat has thrown much light on the different species of *Morchella*, under the name of *Phallus*, in the first volume of the *Mémoires de l'Institut*.

MORCONE, in *Geography*, a town of Naples, in the county of Molise; 69 miles S.S.E. of Molise.

MORCZA, a town of Austrian Poland, in Galicia; 12 miles S. of Halicz.

MORDANTS, in *Dyeing*, are substances employed to increase the permanence and beauty of the various colouring matter. In the more general sense, a mordant is considered as an intermediate substance to increase the affinity of the colouring matter for the substance to be dyed. Other substances are also called mordants, which have merely the effect of increasing the intensity and brightness of the colour, or, as the dyers term it, to bring it out. Of the first kind we have decided examples in alum and oxyd of iron. In order to demonstrate the effect of affinity in the operations where alum is used, we may give a short description of the process of printing a piece of calico. Since the earth or base of the alum is found to be the essential ingredient, it has been found that when the acetat of alumine is employed, the stuff takes the earth from that acid with greater facility than it does from the sulphuric acid, when alum is used. For this purpose the alum is mixed in certain proportion with the acetat of lead. By this means the acetat of alumine is obtained in solution, while the sulphat of lead can be separated on account of its insolubility. The acetat of alumine is then made of sufficient consistence for printing, and is applied to the stuff. After this, the whole of the piece is dipped into a madder bath. Those parts where the alumine has been applied assume a deep and lively colour, while the ground is very faint, and of a dirty hue. If the stuff be now repeatedly boiled with bran, and exposed to the air and light, the ground becomes white, while the printed parts remain permanent. In this process it is clearly shewn that the stuff in itself has not a sufficient attraction of the colouring matter to receive a permanent dye, without the presence of the alumine, which, by its common affinity to both, renders the colour intense and permanent.

This theory is supported by many collateral facts. If a solution of alum, or of the acetat of alum, be added to almost any



any coloured infusion, a precipitate will be found consisting of the earth combined with colouring matter. If the separation of the earth be effected by the addition of an alkali, the coloured precipitate is much more abundant. It is on this principle that lakes used in painting are formed.

The attraction of the alumine is not less apparent for the stuff to be coloured. Berthollet found that by boiling wool with alum, the earth combined with the animal matter which was re-dissolved by sulphuric acid. And M. Curanda has lately ascertained that when alum is boiled with cotton, some of the alum combines with it; since the original quantity could not be obtained by evaporating the water in which the stuff had been boiled.

The action of oxyd of iron as a mordant is not less conspicuous in printing calico, as in the use of alum the acetat of iron is found more proper than the sulphat; not merely because the oxyd is separated with greater facility, but on account of doing less injury to the texture of the stuff. Those parts printed with the acetat of iron, without any other process, assume a deep orange, which colour is in fact the same with the common iron mould. If, however, the stuff so printed be dipped in a bath of madder, it will assume a darker or lighter shade of purple, sometimes approaching to black. This difference is modified by the strength of the bath and the strength of the iron tint.

Tartar (super-tartrat of potash) is much used in dyeing as a mordant, although the nature of it is not well understood. Berthollet found that when wool was boiled with alum alone it acquired a very harsh feel, while that boiled in a mixed solution of alum and tartar was more soft to the touch. The former did not take so bright a colour from the madder bath as the latter. This is a remarkable circumstance, since these two salts have no action on each other. The above chemist, however, is of opinion that the intermediate affinity of the stuff may cause some decomposition. He further thinks, that the tartar has the effect of preventing the too great action of the alum upon the wool, which is much greater than its action upon cotton and silk, in the alluming of which no tartar is used.

The muriat of tin is a mordant of considerable importance in dyeing scarlet. The oxyd of tin has a strong attraction for colouring matter, particularly that of cochineal. This oxyd, like alumine, appears to combine in common with the stuff and the colouring matter, selecting only the pure part of the latter. (See *TIN, Muriat of.*) Other substances are employed in dyeing which come under this head, such as muriats of soda and ammonia, acetat of lead, sulphat of zinc, &c. In dyeing the turkey-red, the animal substance with which the stuff is impregnated is supposed to act as a mordant, by having a greater attraction for the madder than the cotton to be dyed. See *DYEING and PRINTING.*

MORDAUNT, CHARLES, in *Biography*, earl of Peterborough and Monmouth, distinguished in the history of our country, the eldest son of John viscount Avalon, and Elizabeth Carey, was born in 1662, and brought up to the sea service. In 1680 he distinguished himself by his courage at Tangiers, then besieged by the Moors. Having succeeded his father in his title and seat in the house of peers, he spoke against the repeal of the Test act, which James II. endeavoured to promote, and, disapproving the measures pursued by that prince, he obtained leave to go to Holland, under the pretence of taking command of a Dutch squadron in the West Indies. At the Hague he was one of the first of the English nobility that engaged in the designs of the prince of Orange, who paid great deference to his advice, and whom he accompanied in his expedition to England. On the accession of that monarch, he was rewarded with several

high and important state offices. In 1692 he served a campaign in Flanders under king William, by whom he had been raised to the dignity of earl of Monmouth, and in 1697 he succeeded to the earldom of Peterborough, on the death of his uncle Henry, the second earl of that title. In 1705 this noble lord was constituted, by queen Anne, commander-in-chief of the forces sent into Spain, in support of the archduke Charles, competitor for the crown, and also joint-admiral of the fleet with sir Cloudefley Shovel. He displayed great bravery and skill as commander of the British forces in Spain, where he took Barcelona, and brought several provinces to acknowledge Charles III. as their king. A junction was afterwards made between the different corps in Charles' interest, and lord Peterborough expected to have had the chief command. Being disappointed in this, he quitted the army in disgust, and embarking on board an English ship, sailed for Genoa. The loss of the battle of Almanza, and the other disasters in Spain which followed the earl's dereliction, exposed him to censure, and the queen refused to admit him into her presence till he should have justified himself from some charges transmitted by king Charles. The consideration of his conduct, civil and military, was, in consequence, taken up by both houses of parliament, when he cleared himself so effectually, that the enquiry was dropped, and the house of lords voted that he had performed many eminent services during his command in Spain. In 1710, 1711, he was employed in negotiations at Turin, and at some other Italian courts. He was created knight of the Garter in 1713, and in a very short time afterwards was sent again into Italy, as ambassador-extraordinary to the king of the Sicilies, whence he did not return till after the queen's death. During the reigns of George I. and George II. he bore the commission of general of all the marine forces in Great Britain, but was not again engaged in active services. He died at Lisbon, in 1735, at the age of 73. The private character of this nobleman has been thus described: "Born with an exalted imagination, a romantic cast of mind, and a restless activity, he stood distinguished from ordinary mortals in every thing which he did." He said of himself, "that he had seen more kings and more postillions than any other man in Europe;" and to this part of his character Swift alludes in a poem on the earl, which concludes with these stanzas:

"A skeleton in outward figure,  
His meagre corpse, tho' full of vigour,  
Would halt behind him were it bigger.

"So wonderful his expedition  
When you have not the least suspicion  
He's with you like an apparition.

"Shines in all climates like a star,  
In senates bold, and fierce in war;  
A land commander, and a tar.

"Heroic actions early bred in  
Ne'er to be match'd in modern reading  
But by his namesake, Charles of Sweden."

Lord Peterborough was a wit, and very ready at repartee: being once surrounded by a mob, who took him for the duke of Marlborough, then very unpopular; he said "I will convince you I am not the duke: in the first place, I have but five guineas in my pocket; and secondly, here they are, much at your service;" he threw his purse among them, and got off with loud acclamations.

MORDEHI, an East Indian name for a disease, to which the people of that country are subject. It consists in a violent



lent disorder of the stomach. The great heats, copious sweats, and supervening cold of that country, all naturally tend to weaken the stomach. Now if the inhabitants eat or drink immoderately at night, the concoction of their aliments can be but very unduly performed. Hence, besides this distemperature of the stomach, they are subject to others of the bowels; and diarrhœas are very common among them, and with difficulty cured.

**MORDELLA**, in *Natural History*, a genus of insects of the order Coleoptera, of which the generic character is, antennæ moniliform, or pectinate; head deflected and bent under the neck; shells curved downwards towards the tip: at the base of the abdomen, and before the thighs, is a broad lamina. Of this genus there are thirty-four species enumerated by Gmelin, and divided into two sections.

The insects in section A have their antennæ moniliform; fore-feelers clavate, hind-feelers filiform.

#### Species.

\* **ACULEATA**. This is the most common of the British species, measuring from a quarter to half an inch in length: it is entirely black, and of a smooth surface; the abdomen is compressed, and terminates in a spine or sharp process, extending beyond the wing-sheaths: the legs are rather long, and the insect, when disturbed, has the power of leaping or springing to a small distance. It is usually found on plants, in gardens, and other places. It is observed to vary occasionally in colour, having the wing-sheaths sometimes marked by two transverse, cinereous, villous bars.

**FASCIATA**. Tail ending in a point; body black; shells with two cinereous bands. It is found on flowers in the southern parts of Europe.

**8.PUNCTATA**. Tail ending in a point; shells black, with four yellow dots, the first lunate. It inhabits South America. The head is brown; thorax yellowish, villous, with four brown dots before, and waved streaks behind; shells truncate; body grey; spine at the end of the abdomen black.

**TESTACEA**. This is black; shells are testaceous, and edged with black. It inhabits Africa, on the *Daucus*.

**VENTRALIS**. Tail ending in a spine; the body is black, and the abdomen fulvous. It inhabits Germany.

\* **ABDOMINALIS**. The tail in this likewise ends in a spine; the body is black; the thorax and abdomen fulvous. It is found in many parts of Europe. The head, breast, shells, abdominal spine and legs black; thorax and abdomen fulvous, polished, immaculate.

\* **HUMERALIS**. Black; shells yellowish at the base. It is found in this country, and other parts of Europe, on flowers.

**LATERALIS**. Black; mouth, sides of the thorax and legs testaceous. It is found in Holsace on flowers.

**FRONTALIS**. Black; front and legs yellowish. Inhabits Europe.

**ATRA**. Black, immaculate; tail not spinous; found in Denmark.

**THORACICA**. Black; head and thorax yellow. This is found in divers parts of Europe.

**RUFICOLIS**. Black; mouth, thorax and legs yellow. It is found in France, and resembles the last named species.

\* **FLAVA**. Yellow; shells tipped with black; is found on umbellate flowers in several parts of Europe.

**TRICUSPIDATA**. Yellow; abdominal lamina blue; thorax tricuspidate behind; shells with three black dots. It is found in Siberia.

**MURINA**. This is said to be pubescent, undulate and cinereous; the thorax has three black dots.

**6.PUNCTATA**. Glossy black; shells with three white dots. It is found in Germany.

\* **OXYACANTHÆ**. Testaceous; head black; thorax brown. It inhabits England, and is found on the flowers of the "*Cratægus oxyacantha*."

\* **MELANOPUS**. Black; shells, thorax, head and legs testaceous. This is also an English insect.

\* **BICOLOR**. A native of our own country; black shells testaceous tipped with black, a black band in the middle.

**PERLATA**. Glossy black, sub-villous; hinder margin of the thorax, and four spots on the thorax, pearly. It is found among the Alps.

**RASIPES**. An inhabitant of France; brown, legs ferruginous.

\* **CLAVICORNIS**. This species is entirely piceous; the antennæ arcuate; it is found in England, on the flowers of the "*Rhæum rhubarbarum*," and has been thought not to belong to this genus.

B. The insects of this section have the antennæ pectinate; the feelers uniform.

#### Species.

**SUBDIPTERA**. Shells very short, ovate, vaulted, paleish. It inhabits Provence. It is described as having the antennæ yellow; thorax gibbous, black; wings exerted, longer than the body, whitish with a brown spot in the middle; legs dusky, paler rufous at the tip; abdomen of the male black, of the female pale, with a black tail.

**FERRUGINEA**. Rufous; breast, tail and legs black. It inhabits the East Indies. The antennæ are black, the wings brown.

**NASUTA**. Body entirely black, immaculate; it inhabits Japan, and has been described by Thunberg.

**PECTINATA**. Rufous; shells black; found in America. Antennæ are black; head rufous; eyes black; thorax narrower before, pointed behind; shells black at the base, with a cinereous blotch in the middle; wings black; legs rufous, the joints black.

**PARADOXA**. Black; sides of the thorax and shells testaceous. It inhabits the umbellate plants of Europe.

**FLABELLATA**. Testaceous; mouth, breast, and back of the abdomen black. It inhabits Italy. The antennæ are black; the first joint ferruginous; head testaceous; mouth black; abdomen very obtuse, testaceous black on the back.

**PUNCTATA**. Thorax testaceous, dotted with black; shells black-edged. Inhabits Cayenne. The antennæ are black; dots on the thorax 4, 1, 2; margin and suture of the shells testaceous, with a black dot at the tip; the legs are black; shanks testaceous at the base.

**6-MACULATA**. Black; thorax ferruginous; shells testaceous, with three black spots. It is found in America.

**2-MACULATA**. Ferruginous; breast black; shell testaceous with a black spot. Inhabits Hungary.

**DIMIDIATA**. Black; the shells on the upper half are yellow. The body is of a glossy black, except the upper half of the shells; the abdomen is very obtuse and almost truncate.

**LIMEATA**. This is ferruginous; the crown, disc of the thorax, and shells are black.

**POPULNEA**. Black; shells are testaceous with three black bands, the first annular; it is found in Germany on the poplar-tree, whence it derives its name. The head is dusky; the antennæ are ferruginous tipped with black.

**MORDELLES**, in *Geography*, a town of France, in the department of the Ille and Vilaine, and chief place of a canton, in the district of Rennes. The place contains 2292, and the



the canton 6664 inhabitants, on a territory of 100 kilometres, in seven communes.

**MORDENTE**, Ital. literally means biting.

**MORDEXYN**, or **MORDOXI**, a name given to a disease very frequent among the inhabitants of Goa, which consists in a nausea, and continued vomiting, and usually seizes the patient suddenly and unexpectedly, and often proves fatal.

**MORDOVA**, in *Geography*, a town of Russia, in the government of Tambov; 32 miles S.E. of Tambov.

**MORDVINES**, a nation of the Russian empire, called by the Russians Mordva, and dwelling on the Oka and Volga, in the governments of Kazan, Nishnei-Novgorod, Ufa, Simbirsk, and Penza. Although they are not so numerous as the Tscheremisses and Tschuvashes, they form a very considerable nation, which has been found to increase on every successive enumeration, and divide themselves into two main stems, Mokshan and Ersan, by which they are peculiarly named; though the general appellation of Mordva is not unusual even among themselves. This nation, in the opinion of several Russian antiquarians, is the same which Nestor mentions under the names of Meres or Meranes, on occasion of the national confederacy entered into by the five Slavonian and Finnish tribes on the lake Ilman for the founding of the Russian state, and who, at that time, inhabited the districts of Rostof, Halitsch, Kostroma, and Yaroslaf. Tooke's Russia, vol. i.

**MORE**, **ANTONIO**, in *Biography*, born at Utrecht in 1519, was a very successful painter of portraits in a style far advanced above his Flemish or German contemporaries, yet still formal and imperfect, compared with that of Titian and Vandyke. The cardinal Granvelles introduced him at the court of the emperor Charles V. who sent him to Portugal; where he painted the king, John III., his queen, and the Infanta Mary, first wife of Philip II. and was most amply rewarded. He afterwards came to England to paint the portrait of queen Mary, then engaged to the same Philip, and for that picture received 100*l.* a gold chain, and was made painter to their majesties, with a pension of 100*l.* per quarter. He remained in England during Mary's reign, and was very much employed, so that most of the noble mansions in the country are adorned with some of his pictures. On the death of that queen, More returned with Philip to Spain, highly favoured by the king, whose familiarity with him placed his life in danger; for More ventured to return a slap on the shoulder which Philip in a playful moment gave him, by rubbing some carmine on his majesty's hand. This behaviour was accepted by the monarch as a jest, but it was hinted to More that the holy tribunal might regard it as sacrilege, and he fled, to save himself, into Flanders, where he was employed by the duke of Alva. Philip invited him back to Spain, but he excused himself, and did not return. Though portraiture was the source of More's general occupation, yet he had very considerable talents for history. A very fine work of his representing the Ascension of our Saviour is in the gallery of the Louvre at Paris. The style of the composition, which consists of Jesus Christ ascending, crowned by two angels, and accompanied by the figures of St. Peter and St. Paul, is of the severe and grand cast employed by Fra. Bartolomeo; the colouring is exceedingly fine, and correspondent to the style of design; he has been least successful in the expression of the principal figure; if that had been more just and grand, this picture would alone place More among the very first class of artists. He died in 1575, at the age of 56.

**MORE**, **SIR THOMAS**, an illustrious statesman, the only son of sir John More, a judge of the king's bench, was born in London in 1480. Having received an excellent

education, he was placed in the family of cardinal Morton, archbishop of Canterbury, and chancellor. He there so much distinguished himself by the quickness and brilliancy of his talents, and by the amiableness of his temper, that the cardinal was accustomed to say, "This child, though only waiting at table, will prove an extraordinary man." Hence we learn how customary it was, at that period, for children of gentlemen to submit even to menial conditions, when received into the houses of the great. However degrading this may appear to us, it has been justly observed, that perhaps it was not more so than the custom of *fagging* in our public schools, to which boys in the same rank of life are obliged, even now, to submit. The youth did not remain long in this situation; he had put forth the promise of fine abilities and a powerful mind, and was in a short time removed to Canterbury college, now Christ-church, Oxford, where he pursued his studies with diligence and success, and when he had completed his academical course, he was entered at the New Inn, to be initiated in the legal profession, with the view of practising at the chancery-bar. After this, he seems to have changed his plans, and to have removed to Lincoln's Inn, where he remained till he was called to the bar. He was naturally very facetious and cheerful, nevertheless he began, before he had arrived at the years of manhood, to practise those personal austerities which are considered as essential to the devout character in the church of Rome, to which church he was, through the whole of life, zealously attached. In his twenty-second year he was elected a member of the parliament called by Henry VII. for the purpose of demanding an aid for the marriage of his eldest daughter to the king of Scotland. The commons in general thought the demand exorbitant, but no one had courage to oppose it, till Mr. More set the example, and by his powerful eloquence the motion for complying with the king's wishes was rejected. This service, so honourable to his integrity, was unquestionably attended with considerable hazard. Henry was enraged at the opposition made to his demand, and not finding in a mere lad a profitable object of his royal vengeance, who had probably nothing to lose, he contrived a quarrel against his father, and threw him into the Tower as a close prisoner, where he was kept, till he opened the dungeon gate by submitting to an arbitrary and heavy fine. The young man, probably, felt a hundred times more for the consequences inflicted on a parent for the exercise of his own virtuous integrity, than he would from any personal sufferings, and, unwilling to involve his father or friends again in the king's displeasure, retired from public notice, and passed several years in privacy, and in the studies of the French language, of history, and of those arts and sciences which were deemed the liberal arts. It is supposed that during this period he filled the office of law-reader at Furnival's Inn, which he held three years, and after this we find him living in the neighbourhood of the Charter house, in the practice of all the devotional exercises and austerities of the rigid order which then inhabited it, but without taking the vow. He had, it is known, a great inclination to enter into the functions of the ecclesiastical state, but either from the persuasions of his father, or from an unwillingness to be bound by the strict rules of the church, he abandoned the design. By the recommendation of his friend dean Colet, he married the eldest daughter of Mr. Colt, of New-hall in Essex. It has been said that, in visiting this gentleman, he was struck with the charms of the second daughter, but that, unwilling to mortify the eldest, he paid his addresses to her. After his marriage, he applied himself diligently to his profession as a lawyer, in London, and very soon found himself in possession of an annual income of more than 400*l.* which at that time



was considered no mean sum to be derived from a profession. His great reputation caused him to be employed by the English merchants as their agent in some important matters of dispute between them and the merchants of the Steel-yard, on which occasion he went to Flanders. In 1516 he accompanied, to that country, the commissioners sent to renew the alliance between Henry VIII. and Charles, then archduke of Austria, and his conduct on this occasion rendered the king very desirous of engaging him in his particular service. Although his time must have been fully occupied, yet in the midst of all his engagements he found leisure to write, in the Latin language, his "*Utopia*," which he dedicated to a gentleman of Antwerp. This production made him known to the learned abroad, and he engaged in a correspondence with several eminent men of letters, among whom was the great Erasmus. With this illustrious scholar he had contracted an intimate friendship in 1510, when he visited England, which appears always to have subsisted between them.

Mr. More was not only a man of the strictest integrity, but possessed a mind incapable of being swayed by the principles of avarice and ambition, and he steadily refused a pension from the king, which was pressed upon him by cardinal Wolsey, on the ground that such an obligation from the court would shackle him in the performance of his duty as a law-officer of the city, should any matter of dispute occur between them. At length the great credit which he acquired in pleading before the star-chamber for the release of a ship of the pope's, which had been claimed as a forfeiture to the crown, determined the king to insist on his accepting the place of master of requests. In a short time after this, he received the honour of knighthood, was admitted a member of the privy-council, and received into a familiarity with his master, which seemed to entitle him to all the honours and emoluments of a chief favourite. Henry conferred with him on all the topics of literature and philosophy with which he wished to be generally acquainted, without the labour of study, and in this way, notwithstanding the assertion of the ancient sage, there does seem to be a royal road to science. The king likewise amused himself with the wit and humour of More's relaxed conversation, and often required his attendance at his private suppers with the queen, for the purpose of "making them merry." Sir Thomas was no doubt very much flattered by this extraordinary mark of distinction, but he found that it encroached too much upon his leisure and domestic comforts, and he became grave in the presence of his sovereign, that he might have liberty to be merry at home. In 1520, the king conferred upon him the office of treasurer of the exchequer, and he removed to a spacious house at Chelsea. In 1523, when the king had summoned a parliament for the purpose of raising supplies for the war with France, he procured the nomination of his favourite, sir Thomas More, to be speaker of the house. On this occasion, his speech to the king, on being presented to him for approbation, was unworthy his great mind, but he redeemed his character when the cardinal came down to the house, with all his state dignity to overawe that assembly into a compliance with his master's wishes for a subsidy, by refusing to send the king any answer by his minister, and by granting him only the half of what he demanded. If, however, in this instance, he gave any personal offence to the court, it was of no long duration, for in 1526 he was appointed to the chancellorship of the duchy of Lancaster, and in the following year was joined with Wolsey and others in an embassy to the French king. Shortly after this, Henry came to see him at Chelsea, and walked with him more than an hour in his garden with all the marks of partial friendship. After he

was gone, Mr. Roper, son-in-law to sir Thomas, struck with the high honour, congratulated him upon such a distinguished mark of the royal favour. The prudent statesman looked beyond the surface, and was well aware of his master's capricious and tyrannical temper; while therefore he acknowledged that for the present moment, he probably possessed as much of the king's regard as any subject in the kingdom, he added, "Son, I may tell thee that I have no cause to be proud on that account, for if my head would win him a castle in France, it would not fail to go off."

The opinion of sir Thomas with regard to the intended divorce of the queen, was unfavourable to the wishes of the king; nevertheless, upon the disgrace of Wolsey, Henry raised him to the high office of chancellor of England; this was in the year 1530, and he was the first layman that ever occupied that station. He proved himself, in every respect, worthy of the elevated rank assigned him by his sovereign, and the office was never filled by any person who surpassed him in diligence, honour, and integrity. The suitors were probably few in number, but for the dispatch of their causes he sat every afternoon in his own hall, and when he resigned the seals there was not one cause remaining for decision. Bribes were much the fashion of the day, but he rejected them all, and that without any show of austerity, but in a good-humoured way, that seemed peculiar to himself. An instance is mentioned very much to his credit; the wife of a man, who had a suit in chancery, having brought him a gold cup as a present, he ordered it to be filled with wine, and drinking her health, delivered it to her again as a new-year's gift. At another time a lady presented him with a pair of gloves, and forty pounds, in angels, in them; "Mistress," said he, "since it would be unmannerly to refuse your gift, I accept the gloves, but utterly refuse the lining." In proof of his great impartiality, one of his sons-in-law, Mr. Heron, having a cause depending, was advised by the chancellor to submit to arbitration, which he refused, presuming, probably, upon the favour of his great relation, but he had the mortification afterwards to find a decree given directly against him. He was zealous in his endeavours to discourage vexatious and litigious suits, though he was not altogether disinclined to the prosecution of heresy. He had, as we have seen, a warm and ardent attachment to the then established system of religion, and could not bear the contempt that the reformers threw upon it, which he conceived to be subversive of all regular government and subordination. He was, probably, consulted by Henry when he composed his work against Luther, and to that reformer's contemptuous answer he wrote a reply, in which, having the argument against him, he heaped together all the terms of virulent abuse that the Latin language could afford. He afterwards wrote against the historian Tindal; and could not even speak of the reformers, or heretics, as he called them, without hatred and fury. In a letter to Erasmus, he declares, without hesitation, that so great was his dislike to them, that unless they repented he would torment them by all the means in his power. It is even said, and seemingly on unquestionable authority, that he caused Mr. Bainham, a gentleman of the Temple, accused of favouring the new opinions, to be whipped at his own house, in his presence, and afterwards saw him put to the torture in the Tower. By these severities this unfortunate gentleman was induced to recant; but, as it happened in other cases, he afterwards repented of his timidity, avowed his opinions, and was actually burnt in Smithfield: this was probably after More was out of office, as Erasmus asserts that no one was ever put to death while he was chancellor. His intolerance in matters of faith is a subject of great regret, but his prejudices were those of an honest heart, though



though unquestionably in this respect of a narrow mind. The bishops, feeling their obligations to him for assistance in the support of their cause, made up a purse among themselves, and presented it to him, but he refused it, and would not permit any of his family to accept it.

His integrity and scrupulous regard to conscience were soon to be put to the severest test, and the manner in which he went through his trial has conferred great honour on his memory. Nothing could induce him ever to concur in the king's favourite project of a divorce, and being sensible that Henry would, notwithstanding any advice to the contrary, in the end carry the point, he resigned the seals after holding them two years and a half. He now resolved to quit all political concerns, and devote himself to literature and religion. Although the king had expressed himself very graciously to sir Thomas on his resignation, yet the chancellor's resistance to his will deeply offended him, and notwithstanding any outward marks of civility, the tyrant probably meditated schemes, worthy of his own dark and guilty mind, to free himself from the reproaches of so worthy and upright a servant. In his reign, we have more than once hinted, ruin was never far distant from the man who dared to thwart his pleasure, or oppose his plans.

The first circumstance that gave the king a handle against sir Thomas More, was the imposture of Elizabeth Barton, the holy maid, or nun of Kent. When she opened her commission to admonish the king of his crimes against the church, she called upon More, and made him privy to her pretended revelations. Her affected simplicity and holiness seem to have made considerable impression upon him; he wrote her a letter, and on this circumstance being made known, the king directed him to be prosecuted as an accomplice with her, and they were named together in one bill of attainder. While this was suspended over him, a committee was appointed to hear his justification of himself; this plan was not, however, intended to free the accused, but with the view of entrapping him to assent to the king's divorce, which Henry thought he would gladly do, to escape the danger that threatened him. He nobly withstood the temptation, and so completely cleared himself from every imputation of crime, that the king, though most unwillingly, permitted his name to be taken out of the bill. He was next involved in the guilt of refusing to acknowledge the king's claim to ecclesiastical supremacy, and a renunciation of all obedience to the pope. Sir Thomas was cited again and again to appear and take the new oaths, he as frequently refused, and being at length found inflexible to his purpose, was committed to the Tower, and indicted for high treason, on the statute made for the occasion. While he remained in prison, his wife was allowed to visit him, and, in vain, used her worldly arguments to persuade him to comply with the king's pleasure.

Having remained in prison about fifteen months, it was resolved to bring him to trial at the king's bench. The indictment was drawn, and being read to him, he, without any hesitation, pleaded *not guilty*; he justified himself in so masterly a manner, that the attorney-general could not venture upon a reply. The solicitor-general, Rich, to obtain the favour of the court, swore that he had heard the venerable prisoner maintain that the parliament could not make the king supreme head of the church, and upon the evidence of this wretch, which was not only not supported by any other persons, but contradicted by sir Thomas More, and by several noble lords who were present at the time, the words charged were said to be spoken, and who all declared they heard no such words; the jury suffered themselves to be so managed as to return in a few minutes a verdict of "guilty of high treason."

"In that disgraceful age of servitude," says the writer of the article in the General Biography, "juries indeed seemed to have no other rule than the king's pleasure, and a criminal in the eyes of the court was almost sure of being condemned by his country." Sir Thomas More was unmoved at the sentence, which, though quite conscious of his innocence, he probably expected; and he was ordered back to the Tower. On his road, his favourite daughter, Mrs. Roper, who had been anxiously waiting the event, burst through the throng, fell on her knees before her father, and closely embracing him, could only utter the words, "My father, Oh my father!" He tenderly returned her embrace, exhorted her to patience, and resignation to the divine will, and parted from her. Scarcely had they separated, when in a new passion of grief, she again burst through the crowd, and clung round his neck in speechless anguish. His firmness was now overcome; tears flowed plentifully down his cheeks, till with a final kiss she left him. On the fatal day, July 5, 1535, he dressed himself in his best apparel, and walked cheerfully to the place of execution: observing that the scaffold was but slenderly built, he turned to the lieutenant of the Tower and said, "I pray you, Mr. Lieutenant, see me safe up, and for my coming down let me shift for myself." He requested the spectators to offer up their prayers for him, and to bear witness that he died in and for the holy Catholic church, and had been a faithful servant of God and the king. He then addressed himself to his Maker, and calmly submitted to the blow of the executioner, having first requested him to stay his hand till he had removed his beard, which, said he, "has committed no treason." A single stroke severed his head from his body. Such was the end of sir Thomas More, at the age of 55.

Sir Thomas More was esteemed one of the greatest prodigies of wit and learning that England ever produced before his time. He was meek, humble, and charitable, and a despiser of the things of this world. His talents and learning were great and profound. He probably had not his equal in the knowledge of divinity, the laws of his country, the Latin and Greek languages, poetry, and the mathematics. His society or correspondence was courted by all those who, in his time, were regarded as the lights of the world. He could enumerate among his friends Erasmus, Colet, Tostat bishop of Durham, Fisher bishop of Rochester, Lynacre, Lily, and many others, of whom several have celebrated his memory in their respective works. Erasmus, speaking of him in the period of his prosperity, says, "More has built near London, upon the Thames, a commodious house, neither mean nor the object of envy. There he converses affably with his family, his wife, his son and daughter-in-law, his three grand-daughters, and their husbands, with eleven grand-children. There is no man living so affectionate to his children, and he loves his old wife as well as if she were a young maid. Such is the excellence of his temper, that with whatever happens, which could not be prevented, he is as well pleased as if it could not have been better. His house may be resembled to Plato's academy, or rather may be called a school or university of the Christian religion, for there is no one in it who does not read or study the liberal sciences; piety and virtue are the care of all: neither quarrels nor intemperate words are heard; none are seen idle. His household discipline is not maintained by harsh and lofty language, but by kindness and courtesy; every one performs his duty with alacrity, nor is sober mirth wanting."

Sir Thomas More was author of many pieces besides his *Utopia*, a catalogue of which may be seen in the first volume



lume of the "Athenæ Oxonienses;" they were chiefly controversial, and have been long since forgotten. His English works were published collectively, by order of queen Mary, in 1557, and of his Latin works editions were given at Basil, in 1567, and at Louvain in the preceding year. His *Utopia* was translated by bishop Burnet, and has been frequently reprinted in an English dress. The edition referred to in this article is by Thomas Williamson, esq. in 1751, to which are added a short account of the author's life and trial, and a prayer composed by sir Thomas More while a prisoner in the Tower.

Of his children, his favourite was Margaret, the wife of William Roper, esq., whom he educated in classical literature with great care, and who is celebrated by Erasmus on account of her solid learning, the amiableness of her disposition, and the purity of her virtues. Her reverence and affection for her father were unbounded. After his head had been exposed during fourteen days upon London bridge, she found means to procure it, and preserving it very carefully in a leaden box, gave directions that it should be placed in her arms when she was buried, which was accordingly done. Biog. Brit. Hume's Hist. *Utopia*.

MORE, ALEXANDER, a celebrated preacher among the French Protestants, the son of a Scotch divine, the principal of a Protestant college in Languedoc, was born in 1616. He soon distinguished himself among his contemporaries by his acquirements in literature, and when he was scarcely twenty years of age, he obtained by his merit alone the professorship of Greek at Geneva, in opposition to a number of other candidates, whose years, it might have been expected, would have given them the ascendancy. Having fulfilled the duties of this office for about three years, he succeeded the learned Spanheim, who had removed to Leyden, as professor of divinity, and as minister in the church of Geneva. As a preacher, Mr. More possessed very popular talents, which, united with great learning, gave him a superiority over many of his brethren, which excited their jealousy against him. His own temper was far from conciliating, it was hasty, vindictive, and satirical; hence he became involved in numerous quarrels. He held at different periods the professorships of divinity at Hardewyc, at Middleburg, and the professorship of history at Amsterdam. While in the last named situation, he obtained leave of absence for a few months for a journey to France. He extended his route to Italy, and was noticed with respect by the grand duke of Tuscany, who made him several handsome presents. During his stay in this country he wrote a fine poem on the defeat of the Turkish fleet by the Venetians, for which the republic of Venice presented him with a chain of gold. In the spring of 1656, he returned to his professorship in Holland, and retained it till 1659, when he went to Paris, and became minister of a church in that city. Some attempts were made to get him dismissed, but they were ineffectual. In the pulpit he attracted great and extraordinary crowds of auditors, and was regarded by the auditory as an incomparable preacher. It was a matter of considerable dispute whether his excellency lay in any thing solid, or only in show; whether it deserved to be called a flash of lightning, or a steady light. Those who were for decrying his talents, admitted that he must be heard with pleasure, and that he had the power of exciting the passions in a very extraordinary degree. In the midst of the applause with which he was followed, his reputation was attacked, and he was accused of deeds unbecoming the character of a Christian minister, by persons who were themselves respectable, and against whom no charges could be made. The particulars of these charges, and of the proceedings instituted against him, are given by

Bayle, who says, sarcastically perhaps, that "his death, which was very edifying, and the marks of piety which he discovered in his last sickness, blotted out the remembrance of what might have been irregular in his behaviour." He died in 1670, at the age of fifty-four. He was author of many works, written in the Latin language; one on grace and free-will, and one on the holy scriptures: some Latin orations, and Latin poems, more learned than elegant; nevertheless some of them were much read and applauded; and a piece entitled "*Alexandri Mori Fides Publica*," &c. which was intended as a defence against Milton's attack for sending into the world "*Regii Sanguinis Clamor ad Cælum*."

MORE, HENRY, an eminent divine of the church of England, and a Platonic philosopher, was born at Grantham, in Lincolnshire, in the year 1614. He was a lad of fine promise, and was sent at the proper age to Eton school, where, in the course of three years, he made extraordinary progress in the Greek and Latin languages. From Eton he was sent to Cambridge, and was entered of Christ's college in the year 1631: "and now," says he, "a mighty and almost immoderate thirst after knowledge possessed me; I immersed myself over head and ears in the study of philosophy; promising a most wonderful happiness to myself in it." In this temper of mind he applied himself to the diligent perusal of the works of Aristotle, Cardan, Julius Scaliger, and other eminent philosophers, and in a short time made himself master of their doctrines; and took his degree of B.A. in 1635. He appears to have met with but little satisfaction in their respective systems, and abandoned the scholastics, determining to search for better guides to the object which he was seeking after. He accordingly began to study the Platonic philosophy; from this he was confirmed in the conviction, that something greater and more divine than the knowledge of human things, constitutes the supreme felicity of man; and that it is attainable only by that purity of mind, and divine illumination, which will raise him to an union with God. In the year 1639, Mr. More took his degree of M.A., and in the following year he published a work, entitled "*Psychozoia, or the first Part of the Song of the Soul, containing a Christiano-Platonical Display of Life*," which he reprinted in 1647, with other parts of the song, and some smaller pieces, in an octavo volume, under the title of "*Philosophical Poems*," which he dedicated to his father. Having been elected a fellow of his college, he became tutor to many young persons of rank, and among others to sir John Finch; and out of the college he was tutor to the sister of sir John, lady Conway, whose genius and temper were nearly allied to his own, and with whom he entered into an intimate friendship. At the desire of this lady, who espoused the tenets of the Quakers, he drew up some of his treatises, particularly the "*Conjectura Cabalistica*," and the "*Philosophiæ Teutonicæ Censura*;" in return for which she left him a legacy of 400*l*. Previously to the publication of this last piece, he had taken his degree of doctor in divinity, and from this period he appears to have devoted himself very much to the retirement of a college life. In 1642, he resigned the rectory of Ingoldby, which had been purchased for him by his father. He might have been elected to the mastership of his own college, in 1654, in preference to Dr. Cudworth, but he preferred the enjoyment of undisturbed study and contemplation, to any honours and emoluments which the world had to offer. In his college he lived generally unmolested, though he constantly refused to subscribe the *Covenant*. He saw, and occasionally wept over, the miseries of his country, but he was for the most part, like Archimedes,



Archimedes, so busily occupied in his chamber, as to be inattentive to things without. He corresponded with Des Cartes, and embraced many of his theories, though his discernment pointed out the fallacy of some of his arguments, and the weakness of some of his reasonings. Offers of high church preferment were pressed upon him, but he refused them all: he was almost wholly occupied in composing and publishing books, intended to establish the principles, and promote the practice, of virtue and religion. Of these, one of the most popular was entitled "The Mystery of Godliness." The high character which he had obtained by his works, though mostly theological, occasioned his being selected to be one of the Royal Society, with the view of giving reputation to it before its establishment by the royal charter. He was accordingly proposed as a candidate by Dr. Wilkins and Dr. Cudworth, and in due time elected. Dr. More died in 1687, in the seventy-third year of his age. He was highly esteemed and well spoken of by persons of all parties: he was distinguished by the most ardent piety, and an irreproachable life: he was meek, humble, charitable to the poor, and of a most kind and benevolent spirit. He is described by bishop Burnet, as an open-hearted and sincere Christian philosopher, who studied to establish men in the greatest principles of religion, in opposition to the gloomy tenets of Atheism. Hobbes said, "If his own philosophy were not true, he knew of none that he should so much like as that of Dr. More's." His "Enchiridion Ethicum" is highly applauded, by lord Shaftsbury and Mr. Addison, as an admirable system of ethics: and his "Divine Dialogues," on the attributes and providence of God, have been much read and admired. Biog. Brit. Enfield's Hist. of Phil.

MORE, in *Geography*, a township in Northumberland county, Pennsylvania.

MORE'S HEAD, in the *Manege*. See *Moor's HEAD* and *ROAN*.

MOREA, in *Geography*, a country of European Turkey, in the form of a peninsula, joined to the rest of Greece by the isthmus of Corinth; anciently called "Peloponnesus." The kingdoms of which it once consisted were Sicyon, Argos, and Mycenæ, Corinth, Achaia propria, Arcadia, and Laconia. It derives its present name, as it is said, from "Morus," a mulberry-tree, either from its resemblance in shape to the leaf of this tree, or from the number of mulberries which the country produces. It has several rivers, lakes, and mountains, and also many fertile and delightful plains. By the treaty of Carlowitz, the Turks ceded the whole Morea to the Venetians, but in the year 1717, again dispossessed them of it. It is divided into four districts.

MOREADGONG, a town of Hindoostan, in the circar of Ellichpour; 24 miles S.W. of Akowla.

MOREAU, *La Demoiselle FANCHON*, in *Biography*, a famous singer in the serious opera at Paris, had great success after La Rochois had retired from the stage in 1697. Her first performance was in the prologue of Lulli's opera of Phaeton in 1683. She quitted the theatre in 1708, to marry M. de Villiers, an officer of the king's household.

Her sister, Louise Moreau, sung in the year 1680, in the prologue to Proserpine, and was much applauded. Laborde.

MOREAU, RENÉ, an eminent physician of the seventeenth century, was born at Montreuil, in the province of Anjou, in 1587, and was admitted to the degree of doctor in the faculty of medicine at Paris in 1618. He was distinguished as a man of general erudition, as well as by his professional talents, and was in great favour with the court. He was

appointed professor of medicine and surgery at the Royal College, and filled his post with great reputation: and during the years 1630 and 1631, held the office of dean of the faculty of medicine. He died in October, 1656, at the age of sixty-nine. His principal writings were as follows: "De Missione Sanguinis in Pleuritide, cum vita Petri Brisloti," Paris, 1622. "Schola Salernitana, hoc est, de valedudine tuendâ, &c." 1625. This book passed through many editions. "Vita et Icon Jacobi Sylvii," Geneva, 1635, prefixed to an edition of the works of that author. "Epistola exegetica ad Cl. V. Baldum de affecto loco in Pleuritide," Paris, 1641. "Epistola de Laryngotomia," Paris, 1646, published with the "Exercitationes de Angina" of Thomas Bartholin. "Tabulæ methodi universalis curandorum Morborum," 1647. He also translated from the Spanish, Colmenero's work, "Du Chocolate, Discours curieux, divisé en quatre parties." Eloy Dict. Hist. de Med.

MOREAU, JACOB NICHOLAS, counsellor of the court of aids, historiographer of France, librarian to the queen and censor royal, was born at St. Florentine in 1717. He wrote several works, the chief of which are, 1. "Memoires pour servir à l'Histoire des Cacaouas," 12mo. 2. "Memoires pour servir à l'Histoire de notre Temps," 2 vols. 12mo. 3. "Observateur Hollandois; quatre Principes de Morale, de Politique et de droit Publique, ou Discours sur l'Histoire de France," 21 vols. 8vo. He was guillotined in 1794. Nouv. Dict. Hist.

MORECAMBE BAY, in *Geography*, a bay in the Irish sea, on the coast of Lancashire, at the mouths of the rivers Leven and Dudden. N. lat. 54° 4'. W. long. 2° 52'.

MORE'E, a town of France, in the department of the Loire and Cher, and chief place of a canton, in the district of Vendôme. The place contains 912, and the canton 7711 inhabitants, on a territory of 237½ kilometres, in 10 communes.—Also, a river of Bengal, which runs into the bay. N. lat. 21° 50'. E. long. 91° 3'.

MOREIRA, a town of Portugal, in the province of Beira; 32 miles S.E. of Lamego.

MOREL, in *Biography*, a name well known among the eminent French printers. Frederick, the elder, a native of Champagne, was king's printer at Paris, and interpreter to his majesty for the Greek and Latin languages; he composed several works, and died at Paris in 1583, at about the age of 60, leaving a son, known as Frederick Morel the younger, the most celebrated of the family, who succeeded his father, in 1581, as king's printer in the Hebrew, Greek, Latin, and French tongues. He was well versed in these languages, translated from the Greek, and published, from the manuscripts in the king's library, a number of authors, particularly the fathers, with annotations of his own. He sacrificed every thing to study, and being informed that his wife was in the act of expiring, he refused to quit his pen till he had finished what he was about, and by that time news was brought him that she was dead; to which he coolly replied, "I am sorry for it—she was a good woman." He died in 1638, at the age of 78. He had a brother Claud, who was nominated king's printer in 1602. He gave valuable editions of several Greek fathers, and other authors, to which he prefixed learned prefaces of his own composition. He died in 1626, while he was engaged in an edition of St. Athanasius and Libanius, which was completed by his son Claud, who succeeded to the business. Charles, another son of Frederick, exercised the same office with credit, which he resigned, in 1639, to his brother Giles. The latter printed an edition of Aristotle, Greek



Greek and Latin, in four volumes folio, and the great Bibliotheca Patrum, in 17 volumes. Moreri.

MOREL, WILLIAM, a native of Normandy, professor royal of Greek, succeeded Turnebe, in 1555, as director of the royal press, and gave good editions of several Greek authors. He wrote a "Commentary on Cicero de Finibus;" "A Table of the Sects of Philosophers;" and "A Dictionary in Greek, Latin, and French." He died in 1564.

MOREL, ANDREW, a famous antiquary, was a native of Berne, in Switzerland. He excelled in the science of medals, and was author of a work of great value, which he did not live to complete, entitled "Specimen universæ rei nummarie antiquæ," 2 vols. 8vo. He was offered the place of keeper of the royal cabinet of medals at Paris, on condition of renouncing the Protestant religion, which he refused. He was confined some time in the Bastille, and on gaining his liberty he went to D'Armstadt, in Germany, where he died in 1703. In 1734 was published, in 2 vols. folio, "Thesaurus Morelianus, five Familiarum Romanorum Numismata omnia, et disposita ab Andrea Morello, cum Commentariis Havercampi." Moreri.

MORELAND, in *Geography*, the name of two townships of Pennsylvania; one in Philadelphia county, the other in that of Montgomery.

MORELET, the *Abbé*, in *Biography*, a man of letters, contemporary and companion with all the first men of genius and talents in France during the latter part of the last century. He was in England, and a guest at the earl of Shelbourne's (marquis of Lansdown) during the American war, and intimate with Garrick, whom he had known in France. He had much taste and passion for all the fine arts, but chiefly for music, which he had studied, and upon which he seemed much to have meditated.

In 1759, he published a small pamphlet "On Musical Expression and Imitation," which is full of ingenious ideas, and well written.

M. Laborde, in 1780, speaks of the abbé's pamphlet in the following manner.

"This little work on musical expression is as well written as well thought.

"According to him, 'Music is a succession or a combination of measured sounds; a succession in simple melody, a combination in harmony,' and it seems as if it could not be better defined.

"He sustains that music executed by the same organ as the language is spoken, and aiming at the same sense, becomes itself a language. We shall subscribe to this opinion, if he will allow that this language is extremely confined, and can only give us the compressed mass of sentiments, as grief, joy, hatred, &c.; but never the details, as disdain, contempt, suspicion, &c.

"The abbé gives many examples of imitative poetry, which, in his opinion, and in that of our greatest poets, is the first, or rather the only poetry. We confess, to our shame, that we prefer the poetry in which we find ideas, to that which only furnishes images, as we prefer that music which conveys to our ears sweet harmony, sometimes by new means, out of the common road, to the pretended dramatic harmony which seems only to imitate the cries and convulsions of a delirium, &c. Wherever there is no melody, we find no music, and where that melody is not sustained by harmony, we find nothing better. [The reader must be apprized that M. Laborde is a sworn foe to Italian and German music, and a true believer in Lulli and Rameau.]

"We cannot make a stronger objection to the abbé Morelet's doctrine than he has made himself.

"It may, indeed, be said, that this pretended imitation is

absolutely arbitrary, and the work of an imagination which creates agreeable fictions for itself, which sees relations and resemblances where there are none. What resemblance can there be between the rising of the sun, the freshness of the morning, and all the means which music has of imitation?

"This work, continues M. Laborde, is a master-piece in style and sound reasoning. Moreover, we mean not here to contradict the opinion of the author, nor that of those who think like himself. Each is at liberty to believe what he imagines he feels. Of all opinions we only condemn those which are supported insincerely and against conviction; yet we sometimes meet with such in the commerce of society."

We speak of this little work of the abbé Morelet, as it is the only one with which we are acquainted that concerns music; but who does not know his other writings?

Our readers will permit us to quote the following admirable simile from the abbé's pamphlet before we leave it: "A beautiful and pathetic air is the collection of a multitude of accents escaped from souls of sensibility, as the features of Venus have each existed separately, but never together. The sculptor and the musician unite these dispersed features, and give us pleasures which truth and nature never gave."

The abbé's speculations of more than forty years ago, seem to suit modern music much better than any compositions subsisting at the time his pamphlet was written, which has drawn from us an article nearly as long as the ingenious abbé's little tract itself.

MORELL, N., a painter of flowers and fruits, born at Antwerp about 1664, and a disciple of Verendaal. When he had obtained by his abilities a considerable reputation, he went to reside at Brussels, where the court resided, and there soon became known to, and employed by, those of the highest rank.

The compositions of his pictures are in very good style, and are executed with freedom, and a rich tone of colouring, suitable to the subjects he usually represented. He lived to an advanced age, extremely respected and esteemed.

MORELL, THOMAS, a learned English divine and lexicographer, was born in 1701, and died in 1784. He published valuable editions of Ainsworth's Latin Dictionary, and Hedericus's Greek Lexicon; and was the author of Annotations on Locke's Essay on the Human Understanding: he also assisted Hogarth in writing his Analysis of Beauty, and selected the passages of scripture for Handel's Oratorios. Anecd. of Bowyer.

MORELLA, in *Botany*, named by Loureiro from the circumstance of its fruit resembling a little Mulberry. Loureir. Cochinch. 548.—Class and order, *Monoclea Monandria*. Nat. Ord. *Holeracea*, Linn. *Atriplices*, Juss.

Gen. Ch. Male, *Cal.* the small, fleshy, triangular scale of a slender, straight, imbricated catkin. Perianth none. *Cor.* none. *Stam.* Filament none; anther one, nearly ovate, at the base of the scale of the catkin.

Female flowers towards the top of the same catkin. *Cal.* like the male. Perianth none. *Cor.* none. *Pist.* Germen superior, roundish; style none; stigmas two, awl-shaped, spreading. *Peric.* Drupa roundish, clothed on the outside with a vesicular pulp. *Seed.* Nut rather ovate, rugged, of two cells; kernels ovate and flattish.

Eff. Ch. Male, Calyx the scale of a catkin. Corolla none. Anther sessile.—Female, Calyx and corolla as in the male. Stigmas two, sessile. Drupa with a rugged nut of two cells.

1. *M. rubra*. Loureir. Cochinch.—Native of fields and thickets in Cochinchina, and cultivated in China, where it becomes much larger.—We know nothing of this plant, but from



from Loureiro, who says that it is a *tree* about eight feet in height, with a tortuous brown *stem*, and spreading *branches*. *Leaves* on stalks, oblong, a little pointed, mostly entire, occasionally interruptedly serrated, smooth, scattered. *Flowers* in lateral, short catkins. *Drupa* red, acid, about eight lines in diameter, pulpy on the outside after the manner of a mulberry, with a furrowed nut like a peach. Its flavour and colour are like the acid red cherry, being grateful to the taste and wholesome for the stomach. This fruit is eaten by the Chinese in its crude state, but the Europeans make it into tarts or cakes. In Cochinchina, when half ripe, it composes a sauce for fish, and when ripe, a wine is extracted from it, which is by no means to be despised either for its taste, smell, or colour.

Obf. The above author conjectures that *Morella* may possibly be "*Prunus japonica fructu purpureo, Moro simili.*" Kæmpf. Hist. Japan, v. 1. 101, and further says that it somewhat resembles *Cudranus*, Rumph. Amboin. book 7. t. 16.

MORELLA, in *Geography*, a town of Spain, in Valencia, with a castle; 26 miles W.S.W. of Tortosa.

MORELLI, GIOVANNI, in *Biography*, a comic opera-singer with a powerful base voice, and a considerable share of the true humour of a *buffo caricato*, arrived here from Vienna in 1787, with the *Storace*. The first time we heard him perform, we made the following record in our musical memorandum-book; which, though seventeen years have elapsed since he first trod our stage, he is still alive and vigorous, at least in voice, so that our opinion of his abilities remains the same as when the following entry was made.

"Morelli has a base voice of nearly the same force and compass as Tasca, but infinitely more flexible and agreeable. He is likewise a good actor, and superior in all respects to every *buffo caricato* we have had since Morigi's first appearance in the Buona Figliuola, 1766; yet, as a principal singer to supply the place of a tenor, it must be owned that he is inadequate to the expectations of those who remember the sweet voice and excellent humour of Lovatini.

MORELY, LORD, an ingenious nobleman, was the son of sir Thomas Parker, in the county of Essex, and a great favourite with Henry VIII., who raised him to the peerage. He secured that monarch's favour by concurring in his divorce from Catherine, and his marriage with Anne Boleyn. He died in 1547. Lord Morely wrote several Latin poems. Walpole's Royal and Noble Authors.

MOREMALLA, in *Geography*, a town of Bengal; 30 miles S.E. of Moorshedabad.

MORENA BAY, a bay on the coast of Chili, with a convenient harbour for careening ships, though narrow, and not safe with a N.W. wind. S. lat. 23° 45'.

MORENGO, a town of Italy, in the department of the Serio; 10 miles S.S.E. of Bergamo.

MORERI, LOUIS, in *Biography*, celebrated as the first author of the great historical dictionary which goes under his name, was born, in 1643, at Bargemont, a small town in Provence. He was educated with a view to literary pursuits, and studied rhetoric and philosophy at the Jesuits' college at Aix. He appeared as an author at the age of eighteen, and published a collection of poetry: after this he obtained employment as a translator and compiler. He took holy orders, preached on controversial topics at Lyons during five years, and was created a doctor of theology. About this time he formed the plan of a new historical dictionary, for which his principal qualification was a good knowledge of the modern languages. His "*Dictionnaire Historique*" was first published at Lyons in 1674,

VOL. XXIV.

in one volume folio. It was dedicated to M. de Longue-meau, bishop of Apt, in Provence, with whom he passed a year in quality of chaplain. He accompanied that prelate to Paris in 1675, and was introduced to the assembly of clergy, and to the principal men of letters. His great object seemed to be to revise, correct, and augment his dictionary, and to this he applied himself so assiduously, that he injured his constitution, and died at the early age of thirty-seven. He had, previously to his death, prepared a second edition of his work, which appeared in 1681, in two volumes folio. This work professedly treats of history, chronology, geography, biography, mythology, &c. and has passed through many editions. One of the most important improvements which it received was from the celebrated John le Clerc, who published an edition of it in 1691, in four volumes folio. It has always been in high estimation, and may in general be relied on for matters of fact: though the foundation of Bayle's Dictionary was professedly the correction of errors that he said had crept into the dictionary of Moreri. New editions and supplements were published from time to time, till at length, in 1759, the twentieth edition appeared at Paris in ten thick volumes folio. It is to this edition that the present work is indebted for much information in various biographical articles. Under the article Moreri, in the edition just referred to, we have an historical account of the progress of the Historical Dictionary from the commencement, and the writer concludes by saying, "The great number of editions that have been published of Moreri's Dictionary, demonstrates the great utility of this important work. Other nations have envied France the execution of so vast a project, and many persons have given, in their own language, elaborate works on the same plan. Thus we have seen a Moreri in English; another in Germany, printed at Basle; another printed in the Spanish language at Paris. And at this present time (1759) there are four Jesuits, of whom two live at Turin, and two at Florence, preparing a translation into the Italian, to be printed at Nice, in 12 vols. folio." Moreri.

MORES, EDWARD ROWE, an English antiquary, was born in 1730, at Tunstall, in Kent, and educated at Merchant Taylors' school, from whence he removed to Queen's college, Oxford, where he published an ancient fragment, entitled "*Nomina et Insignia Gentilitia Nobilium Equitumque sub Edwardo primo Rege Militantium*," 4to. In 1752, he was chosen a fellow of the Society of Antiquaries; and he projected the Equitable Society for insurance of lives and survivorship by annuities. He was the author of "*The History and Antiquities of Tunstall in Kent*," and "*A Dissertation on Founders and Foundries*." He died in 1778. Pref. to Hist. of Tunstall.

MORES, in *Geography*, a town of the island of Sardinia; 23 miles E. Alghieri.

MORESKE, or MORISKO, a kind of painting, carving, &c. done after the manner of the Moors: consisting of several grotesque pieces and compartments promiscuously intermingled, not containing any perfect figure of a man or other animal, but a wild resemblance of birds, beasts, trees, &c.

These are also called *arabesques*, and are particularly used in embroideries, damask-work, &c.

*Moresque dances*, vulgarly called *morrice-dances*, are those altogether in imitation of the Moors; as *sarabands*, *chacons*, &c. and are usually performed with castanets, tambours, &c.

There are few country places in this kingdom where the morrice-dance is not known. It was probably introduced into this country about, or a little before the reign of

X

Henry



Henry VIII., and is a dance of young men in their shirts, with bells at their feet, and ribbands of various colours tied round their arms, and slung across their shoulders.

**MORET**, in *Geography*, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Fontainebleau; 9 miles N.E. of Nemours. The place contains 1650, and the canton 8253 inhabitants, on a territory of 140 kilometres, in 14 communes.

**MORETEL**, a town of France, in the department of the Isère, and chief place of a canton, in the district of La Tour du Pin; 7 miles N. of it. The place contains 849, and the canton 13,939 inhabitants, on a territory of 250 kilometres, in 20 communes.

**MORETON-HAMPSTEAD**, a market-town and parish in the hundred of Teignbridge, Devonshire, England, is situated 11 miles from Exeter, and 185 from London, on a gentle eminence, bounded on every side but the west by lofty hills. The face of the country in the vicinity is strewed with scattered fragments of rocks; some of which are so large, and so singularly piled on each other, as to give the idea of buildings thrown down by an earthquake. The town is governed by a portreeve and other officers, who are elected annually at the court-leet of the lord of the manor. The inhabitants, as enumerated under the act of the year 1800, amounted to 1768: the number of houses being 459. Many of the lower class of the people are employed in the manufacture of woollen yarn and serges. The principal public edifices are the parish church, three meeting-houses for dissenters, and a respectable charity-school. Three fairs are held here annually, and a weekly market on Saturdays. Beauties of England and Wales, vol. iv.

**MORETON-Hen-Marsh**, or *Moreton-in-the-Marsh*, a well-built village in the upper division of the hundred of Westminster, in the county of Gloucester, England, is situated on the Roman fofs-way, four miles from Stow, 27 from Gloucester, and 83 from London: being about two miles west from the place where an ornamented pillar, inscribed "This is the Four-Shire Stone," marks the point of meeting of the counties of Gloucester, Oxford, Warwick, and a detached part of Worcester. Moreton was anciently the property of the abbey of Westminster, and continued part of its possessions till the dissolution, when it was granted to the dean and chapter of Westminster, whose property it still remains. The abbots endeavoured, by various means, to increase its importance; and procured the charter of a market, and the privileges of exempting the burghesses, as they were then called, from tolls in the several counties above-mentioned. But the place never attained any considerable consequence; and the market has been long disused; an ancient building, supported by pillars, in the middle of the village, is said to have been the market-house. Two annual fairs are still held here. According to the population survey in the year 1801, the number of houses in this parish were 171; that of the inhabitants 829: the poorer classes of the latter are chiefly employed in spinning linen-yarn. Its situation on the fofs, and the discovery of some coins in the vicinity, indicate that Moreton was once a small Roman station. Beauties of England and Wales, vol. v. Rudge's History of Gloucestershire, vol. i.

**MORETON'S Bay**, a bay on the E. coast of New Holland, between Cape Moreton and Point Look-out.

**MORETON, Cape**, a cape on the coast of New Holland. S. lat. 26° 56'. E. long. 206° 28'.

**MORETTA**, a town of France, in the department of

the Stura, seated on a small river, which runs into the Po; 16 miles S. of Turin.

**MORETUM**, among the Romans, a kind of salad, composed of the eight following ingredients, *viz.* garlic, parsley, rue, coriander, onions, cheese, oil and vinegar.

**MOREUIL**, in *Geography*, a town of France, in the department of the Somme, and chief place of a canton, in the district of Montdidier; 9 miles N.W. of it. The place contains 1499, and the canton 11,719 inhabitants, on a territory of 192½ kilometres, in 25 communes.

**MOREY**, a town of France, in the department of the Jura, and chief place of a canton, in the district of St. Claude; 10 miles N.N.E. of it. The place contains 1218, and the canton 10,834 inhabitants, on a territory of 222½ kilometres, in 11 communes.

**MOREZZO, St.**, or *St. Maurice*, a town, or rather village of Switzerland, belonging to the Grisons, in Upper Engadina, is agreeably situated upon the side of a hill, overlooking a small lake, which lies in the bottom of the mountains, and is bounded by rising banks, fludded with wood and pasture. This village is remarkable for a copious spring of mineral water, much esteemed for its efficacy in the cure of several disorders: it issues from the ground at the distance of half a mile on the other side of the river Inn, and is strongly impregnated with vitriol: 25 miles N.N.E. of Chiavenna.

**MORFIL**, or **MARFIL**, a name given by the traders to raw *Ivory*; which see.

**MORGA**, in *Geography*, a river of Persia, which runs into the Sihon, on the borders of Bucharia.

**MORGAGNI, GIAMBATISTA**, in *Biography*, an eminent physician, distinguished particularly by his anatomical researches, was born at Forlì, in Romagna, in February, 1682. He lost his father in his infancy, but under the judicious direction of his mother, his education was very successfully conducted; and he displayed a proficiency in classical and philosophical acquirements beyond his years. Thus well prepared with preliminary knowledge, he commenced his medical studies at Bologna with great ardour, and soon attracted the attention and esteem of his able masters, Valsalva and Albertini; the former of whom availed himself of his assistance in the researches into the organ of hearing, which he was at that time prosecuting, and in drawing up his memoirs upon that subject. Morgagni also performed the duties of the professorial chair during the absence of Valsalva on a journey to Parma, and illustrated the lectures, which he delivered on this occasion, by numerous anatomical preparations. These illustrations, and the easy and perspicuous eloquence in which he addressed his auditors, added to his kind and engaging manners, obtained for him a general esteem, as well as the friendship of the most distinguished philosophers of the place. His zeal in the pursuit of knowledge led him, however, to visit other schools of medicine. He went first to Venice, where he cultivated several branches of physics, with the assistance of Poleni, Zanichelli, and other scientific men; and afterwards he visited Padua, where he attended the schools, under the direction of distinguished professors, with his accustomed industry. After having completed this comprehensive course of study, he returned to settle at his native place. He soon perceived, however, that this was too limited a circle for the exercise of his talents, and readily followed the advice of Guglielmini, who pressed him to return to Padua. Here he did not remain long without occupation; for the death of Guglielmini, in 1710, occasioning a vacant chair, by the succession of Vallisnieri to that of the latter, Morgagni was nominated



nominated to it, in 1711, and taught the theory of physic. He became the intimate friend of the celebrated Lancisi, whom he assisted in preparing for publication the drawings of Eustachius, which appeared in 1714. He had already distinguished himself by the publication of the first part of his own work, the "Adversaria Anatomica," Bonon. 1706, quarto, which was remarkable for the originality of its execution, and for the accuracy, as well as the novelty, of the observations which it contained. He published, successively, from this time to the year 1719, five other parts of this important work, which contains a great many discoveries in different parts of the human body, most correctly detailed.

The progress of this work had extended his reputation throughout Europe; and in 1715, his talents were rewarded by an appointment to the first anatomical professorship in the university of Padua; and henceforth to the close of a long life he ranked deservedly at the head of the anatomists of his time. His knowledge was by no means limited to professional subjects; he was well versed in general literature, and a proficient in history and antiquities. Literary honours were accumulated upon him from every quarter of Europe. He was elected a member of the *Academia Naturæ Curiosorum*, in 1708; of the Royal Society of London, in 1724; of the Academy of Sciences at Paris, in 1731; of the Imperial Academy of Petersburg, in 1735; and of the Academy of Berlin, in 1754; and he was one of the first associates of the Institute of Bologna. All the learned and great, who passed through Bologna, visited Morgagni; he was honoured by the particular esteem of three successive popes; and his native city of Forlì placed his bust in their public hall during his life, with an honorary inscription. In a word, both at home and abroad, the character of this distinguished man was held in the highest estimation, and the writings of the most eminent of his contemporaries bore testimony to his various merits. He married a lady of noble family at Forlì, by whom he had fifteen children, eight of whom survived him. He was of a robust habit, tall, and of a lively and agreeable countenance, and is believed to have contributed to the regularity of his good health by a continued practice of cold bathing. By his professional labours, and a life of frugality, he accumulated a large property, an excess of economy having been accounted one of his foibles. He died at the advanced age of ninety years, about the end of 1771, in the possession of his faculties.

In addition to the *Adversaria*, already mentioned, Morgagni published the following works: "In Aurelium Celsum et Quintum Serenum Sammonicum *Epistolæ quatuor*," 1704. "Nova Institutionum Medicarum Idea," Patav. 1712; which was written upon his appointment to the theoretical chair, and teaches the proper method of acquiring medical science. "Vita Guglielmini," prefixed to an edition of the works of that physician, Geneva, 1719. "*Epistolæ Anatomicæ duæ, novas observationes et animadversiones complectentes, quibus Anatomæ augetur, &c.*" which were edited at Leyden by Boerhaave, and relate chiefly to a dispute with Bianchi on the structure of the liver. "*Epistolæ Anatomicæ XVIII. ad Scripta pertinentes celeb. Ant. Mar. Valsalvæ*," two volumes, quarto, Venice, 1740. To these epistles are prefixed a life of Valsalva. "De Sedibus et Causis Morborum per Anatomiam indagatis, Libri quinque," Venice, 1760, folio. This great and valuable work was published when the author had nearly reached his eightieth year. It contains a prodigious collection of dissections of morbid bodies, made by himself and his master, Valsalva; arranged according to the organs of the body in

which the diseases were seated. He followed the plan adopted by Bonetus, in his "*Sepulchretum Anatomicum*;" but the accuracy and fidelity of his details render this collection of morbid anatomy of very superior value to all that had preceded it. His last publication, in 1763, "*Opuscula miscellanea, quorum non pauca nunc primum prodierunt*," Venice, folio, contains dissertations on the lachrymal ducts, on the glands, on gall-stones, urinary calculi, &c. in addition to his first-published critical dissertations on Celsus. In 1765, a complete edition of his whole works was printed at Bassano, in five volumes, folio. Eloy Dict. Hist. de Med. Gen. Biog.

MORGAN, WILLIAM, an eminent Welsh prelate, was educated at St. John's college, Cambridge, after which he obtained the vicarage of Welshpool, and in 1595 was made bishop of Landaff, from whence he was, in 1601, translated to the bishopric of St. Asaph. He died three years after this elevation. He is particularly known as having had a principal concern in the translation of the Bible into Welsh, which was first printed in 1588.

MORGAN, in *Geography*, a district of North Carolina, bounded W. by the state of Tennessee, and S. by the state of South Carolina. It is divided into the counties of Burke, Wilkes, Rutherford, Lincoln, and Buncomb; and contains 49,184 inhabitants, including 4643 slaves.

MORGANATIC MARRIAGE. See MARRIAGE.

MORGANIA, in *Botany*, so called by Mr. R. Brown, in honour of an apothecary named Hugh Morgan, who flourished at London in the days of queen Elizabeth, and whose garden is often mentioned by Lobel and Gerard. Brown Prodr. Nov. Holl. v. 1. 441.—Class and order, *Dydynamia Angiospermia*. Nat. Ord. *Personate*, Linn. *Scrophulariæ*, Juss.

Ess. Ch. Calyx inferior, in five deep equal segments. Corolla ringent; its upper lip two-lobed; lower in three nearly equal, inversely heart-shaped segments. Stamens included; lobes of the anthers divaricated, simple. Stigma of two flat lobes. Capsule of two cells, and two deeply divided valves; partition from the inflexed margins of the valves. *Brown*.

A New Holland genus of herbaceous plants, next akin to *HERPESTIS*, see that article, but differing in having an equally divided calyx, and a more unequal corolla. The stem is erect, quadrangular. Leaves linear. Flower-stalks axillary, single-flowered, each with a pair of bractæ at the top. Flowers blue.

1. *M. glabra*.—Smooth. Leaves linear, slightly toothed. Stalks when in flower nearly as long as the calyx.

2. *M. pubescens*.—Downy. Leaves somewhat lanceolate, toothed. Stalks when in flower shorter than the calyx.

Both species were gathered by Mr. Brown in the tropical part of New Holland. He conceives them to be specifically distinct, though very nearly related to each other.

MORGANS, in *Geography*, a settlement in Kentucky; 38 miles E. of Lexington.

MORGANTOWN, a post-town and capital of the Morgan district, situated in Burke county, near Catabaw river, and containing about 30 houses, a court-house and gaol; 45 miles from Wilkes. N. lat. 35° 47'.—Also, a post-town of Virginia, and shire-town for the counties of Harrison, Monongalia, Ohio, and Randolph, situated on the E. side of Monongahela river, and containing a court-house, a stone gaol, and about 60 houses; 30 miles from Brownsville. This town may be considered as the head of navigation on the Monongahela.

MORGANZA, a town of Washington county, Pennsylvania, almost surrounded by the E. and W. branches of



Charter's river; 13 miles S. of Pittsburg. This town from its situation is likely to be the centre of a great manufacturing country, as the lands in its environs are well adapted to grazing and agriculture, and as it affords considerable quantities of excellent iron-ore. The adjoining hills are also suitable for raising live-stock, and particularly the fine long-wool breed of sheep. From this country considerable exports are already made to Orleans, of flour, bacon, butter, cheese, cyder, and rye and apple spirits. The black cattle that are reared here are sold to the new settlers and to cattle merchants, for the Philadelphia and Baltimore markets; and many have been driven to Detroit and Niagara.

MORGARTEN, mountains of Switzerland, in the canton of Schweiz, in which is a pass, famous for a victory gained by 1300 Swifs posted upon the mountains over Leopold duke of Austria, who in 1315 marched against the confederate cantons, at the head of 20,000 troops. The Swifs, it is said, lost but fourteen men in this memorable engagement, which has been compared to the battle of Marathon, that ascertained the liberties of Greece, as this insured the independence of the Swifs; 10 miles S.E. of Zug.

MORGAY, in *Ichthyology*, an English name for the sea-fish, called also the *rough bound-fish*, one of the galeus kind; the *catulus minor* of Salvan, and *mustelus stellaris tertius* of Belonius. See SQUALUS *Catulus*.

MORGENBERGHORN, in *Geography*, a mountain of Switzerland, considered as one of the principal Alps, in the canton of Bern; its height is 7456 feet.

MORGENFELD, a town of Prussia, in the province of Bartenland; nine miles N. of Rattenburg.

MORGES, a town of Switzerland, in the Pays de Vaud, the capital of a bailiwick, on the N. side of the lake of Geneva, with a port and quay. It is situated at the extremity of a beautiful bay, and its environs are extremely pleasant; the banks of the lake forming an amphitheatre, that gently rises to the Jura, and Mont Blanc presenting itself through an immense opening in the opposite chain of rocks, which seems to have been formed by nature for exhibiting a sublime perspective of that beautiful mountain. Near the town is a lime-tree twenty-four feet four inches in circumference, with branches of magnificent extent; and it has also a companion about three feet less in girth.

MORGII, among the *Mahometans*, a sect who lay much stress upon belief, and stand opposed to the *alwaidii*.

MORGO, in *Geography*, an island in the gulf of Venice, near the coast of Friuli. N. lat. 45° 44'. E. long. 13° 16'.

MORGONG, a town of Bengal; 25 miles W. of Moorshedabad.

MORGUES, MATTHEW DE, in *Biography*, preacher to Lewi XIII., and almoner to Mary de Medicis, was born at Languedoc in 1582. He wrote several pieces against cardinal Richelieu, on which account he was obliged to quit the kingdom, but after the death of that minister he returned to Paris, where he died in 1670. He was author of "Sermons" and many other works. Morcri.

MORGURRY, in *Geography*, a town of Hindoostan, in Mylore; 16 miles N. of Rettighery.

MORHANGE, a town of France, and principal place of a district, in the department of the Moselle; 21 miles E.S.E. of Metz. N. lat. 48° 55'. E. long. 6° 43'.

MORHOF, DANIEL GEORGE, in *Biography*, a learned miscellaneous writer, was born in 1639 at Wismar, in the duchy of Mecklenburg. Having laid a good foundation in classical learning, he was sent to study at Stettin and Rostock, and in consequence of a copy of Latin verses which he com-

posed while he was at the latter university, was made professor of poetry there in 1660. In 1665 he was appointed to the chair of poetry and eloquence at the university of Kiel, and in 1671 he was made professor of history, to which was added the office of public librarian. He was incessant in his pursuit of knowledge, and laboured so hard in the duties attached to his different offices, that he fell into a languishing state, and died in his fifty-third year. The writings of Morhof are numerous, consisting of poems, orations, and dissertations, on a great variety of topics, but that which is best known, and reckoned the most valuable of all his pieces, is a general account of books and authors, entitled "Polyhistor five de Notitia Auctorum et rerum commentarii." This was printed in 1688. It has passed through many editions with considerable augmentations, of which the best is that by John Albert Fabricius, in three volumes 4to. 1732.

MORHUA, in *Ichthyology*, a name used by some authors for the common cod-fish. See GADUS *Morhua*.

MORI, in *Geography*, a town of Hindoostan, in Oude; 16 miles N.E. of Fyzabad.

MORIA KIS, a town of Hungary; 18 miles S.S.E. of Debreczin.

MORIAH, MOUNT, in *Scripture Geography*, a mountain near Jerusalem, on which the famous temple of Solomon was built (2 Chron. iii. 1.), situated S.E. of Calvary, having Millo on the west, and so called from the filling up of that deep valley, in order to raise it to a level with the rest. It has been commonly thought that on this mount Abraham was commanded to offer up his son Isaac; though this notion is liable to some objections. The Samaritans, by reading its name in Genesis (xii. 6—xiv. 2) Moreh, instead of Moriah, have taken occasion to affirm, that it was mount Gerizim, near Schechem and Moreh, on which God directed the patriarch to make this sacrifice.

MORIAM, in our *Old Writers*, a head-piece called a pot, stat. 4 & 5 P. & M. c. 2.

The word comes from the French *morion*, or Italian *morione*, i. e. *casque*. See MORION.

MORIANI, in *Geography*, a town of Corsica (Golo), in the department of Bastia, the canton of which contains 2779 inhabitants.

MORICHES, a place with a post-office in Suffolk county, New York; 213 miles from Washington.

MORIENNE BAY, a tolerably deep bay on the E. coast of the island of Cape Breton, near Miray bay, from which it is separated only by Cape Brule.

MORIGI, ANDREA, in *Biography*, an excellent comic singer with a base voice, who arrived in England with Lovatini in 1766. His voice, humour, and action in performing the part of Tagliaferra in the Buona Figliuola, were so perfect and so amusing, that they established his favour with the public in whatever part he afterwards appeared. He quitted England but a few years ere he returned again in 1783, and remained here till he was totally worn out in the service of that public which suffered him, unobserved, to approach

"Mifery's darkest cavern—

Where hopeless anguish pour'd her groan,

And lonely want retired to die."

MORILLEAH, in *Geography*, a fort of Hindoostan, in Bahar; 15 miles E. of Betiah.

MORILLES, a kind of mushroom, about the bigness of a walnut, pierced with holes like a honey-comb, and said to be good for creating an appetite. They are also accounted



accounted restorative, and frequently used in sauces and ragouts.

MORILLON, in *Ornithology*, the name of a species of duck, seeming the same with the *cape rosso*, a small red-headed wild duck. See DUCK.

MORIMAL, in *Geography*, a town of Hindoostan, in the circar of Cuddapa; 25 miles N.E. of Gandicotta.

MORIMGAMBO, a sea-port on the W. coast of Madagafcar. S. lat. 14° 30'.

MORIN, JOHN BAPTIST, in *Biography*, a celebrated physician, mathematician, and astrologer, was born at Ville-Franche, in Beaujolois, in February, 1583. He made an early proficiency in his studies at Aix, in Provence, and even taught philosophy in that city before he was twenty years of age. He afterwards went to Avignon for the purpose of studying medicine, and took the degree of doctor in that faculty in 1613. He then went to Paris, where he obtained the patronage of the bishop of Boulogne, and was sent by him to examine the nature of metals in the mines of Hungary. From the observations which he made in those deep caverns, he imagined he had discovered three regions into which the interior of the earth was divided; and published a work, entitled "Nova Mundi sublunaris Anatomia," which, in those credulous times, obtained the conviction of many readers. Upon his return to Paris, he found a Scotch astrologer, of the name of Davison, sharing the patronage of the bishop; and he not only studied, but became a zealot in that art, and subsequently obtained much reputation in the practice of it. For at that period, the courts of the greatest princes, and some of the most distinguished characters in science, were misled by the delusions of judicial astrology. His first success in this science was practised on his patron: for having consulted the stars, in order to calculate the events of the year 1617, he informed the bishop of Boulogne, that he was threatened with the loss of liberty or of life. At this intelligence, the prelate, though infuriated with the pretended science, only laughed; but, luckily for the credit of the astrologer, the bishop engaged soon afterwards in some state intrigues, and having embarked with the unsuccessful party, he was treated as a rebel, and actually imprisoned in that year. Morin also obtained access to the two celebrated cardinals Richelieu and Mazarin, who were weak enough to give their confidence to his pretended skill, and actually consulted him about their affairs. The latter even granted him a pension of two thousand livres, which was regularly paid; and obtained for him the appointment of professor of mathematics in the Royal College of Paris. The count de Savigny, secretary of state, also depended upon his astrological computations, and especially consulted him respecting the proper time of paying his visits to the cardinal Richelieu. When queen Christina, of Sweden, was at Paris, she sent for Morin, and expressed her high admiration of his talents, informing him that she deemed him the greatest astrologer in the world. Bayle has detailed a great number of examples of his predictions, and of his proceedings in evading the construction of them, when not successful; to which the curious reader may refer. He attempted to confute the system of Copernicus; but was treated with much pointed ridicule, in addition to solid argument, by Gassendi, Bernier, and other scientific men, who laughed at his follies, and exposed the falsehood of his pretended art. Nevertheless Morin was possessed of scientific attainments by no means contemptible; inasmuch that M. des Cartes, on whose theory of light he had published some animadversions, entered into a correspondence with him,

considering his objections as deserving of serious consideration. Morin died at Paris in November, 1656, at the age of seventy-three.

He wrote a great number of works, in addition to the anatomy of the earth already mentioned: namely, "Astronomicarum Domorum Cabala detecta," 1623. "Trigonometriae canonicæ libri iii." 1633. A book entitled, "Quod Deus sit," which was afterwards published, in 1655, in a larger form, with the title of "De vera Cognitione Dei ex solo Naturæ Lumine." "Famosi problematis de Telluris Motu vel Quiete hæcenus optata Solutio," 1631; and some other pieces against the system of Copernicus. "Ad Australes et Boreales Astrologos pro Astrologia restituenda Epistolæ," 1628; and a curious treatise, entitled "Refutatio compendiosa erronei et detestandi Libri de Præadamitis," 1656. His favourite work, the result of thirty years of labour, intended to illustrate the pretended science of judicial astrology, was published after his death, in 1661, at the Hague, with the title of "Astrologia Gallica." The queen of Poland, at the recommendation of one of her secretaries, defrayed the expence of this publication, on which she expended two thousand crowns. See Bayle, Dict. Hist. Eloy Dict. Gen. Biog.

MORIN, LOUIS, a physician and botanist of much singularity of character, was born at Mans, in July, 1635. His father having a numerous family, and only the slender income afforded by a place in the salt-office, was enabled to give this, his eldest son, the mere rudiments of scholastic education. During this early period of his life, he acquired a partiality for botanical pursuits; and when he left school, he set off for Paris on foot, herborising by the way, for the purpose of studying philosophy in the metropolis. His attachment to botany naturally led him to the choice of medicine as a profession; and, during his application to this science, perhaps from the necessity of rigid economy, in which his circumstances placed him, he led the life of an anchorite, restricting his diet to bread and water, with the occasional indulgence of a little fruit. This mode of life greatly diminished the number of his wants, and was probably the origin of that extraordinary disinterestedness and beneficence, by which he was greatly distinguished. He obtained the degree of doctor of physic in 1662. His botanical knowledge procured him the esteem of Messieurs Fagon, Longuet, and Galois, and he was frequently consulted by them, during their labours in the formation of the catalogue of the plants in the royal garden, which was published under the name of M. Vallot, the first physician, in 1666. He had been several years in practice, before he obtained any public mark of esteem, when at length he was appointed *expectant* at the Hôtel Dieu; but a considerable time elapsed, before his humble merit, unsupported by intrigue or solicitation, was recompensed by the place of pensionary-physician to that hospital. Yet he derived no advantage from the pension, which he always returned into the money box, taking care that that act was seen by no one. Although his constitution was delicate, and his frame slender, yet he continued to restrict himself to the following regular system of activity and abstemiousness. At all seasons he rose at two in the morning, and spent three hours in his devotions. Before six in summer, and somewhat later in winter, he visited the poor patients in the Hôtel Dieu, and usually heard mass at Notre Dame. He dined at eleven; and after dinner indulged his botanical taste at home, or, in fine weather, at the royal garden. He then shut himself in his closet, if he had no poor patients to visit, and concluded the day in study, or received visits at home, which,



which, however, he did not encourage. He always retired to rest at seven.

In 1699, Morin was appointed associate-botanist to the revived Academy of Sciences, through the recommendation of M. Dodart, whom he succeeded as pensionary-botanist, in 1707. During the absence of Tournefort, on his voyage to the Levant, in 1700, the post of demonstrator of plants in the royal garden was confided to him, at the request of that great botanist; who also honoured him by giving his name to a new plant, *Morina Orientalis*, which he brought from the East. A few years before his death, his strength began to fail, and incapacitated him from continuing his active duties; and he then found it necessary to add a little wine to his diet: but he sunk under a gentle and gradual decay in 1715, in the 80th year of his age. He left behind him no other property, except a library, valued at nearly 20,000 crowns, a herbal, and a collection of medals. He published two papers in the Memoirs of the Academy; one, containing an erroneous physiological hypothesis respecting the passage of the drink to the bladder; and the other, a "Memoire sur les Eaux de Forges." Among his papers were a very minute index to Hippocrates, Greek and Latin; and a meteorological journal of more than 40 years. Eloy Dict. Hist. de la Med. Gen. Biog.

MORIN, JOHN, a learned French ecclesiastic and oriental scholar, was born at Blois in the year 1591. Having been instructed in classical learning and the belles lettres at Rochelle, he was sent to Holland, and entered as a student at the university of Leyden. Here he went through the usual courses of philosophy, mathematics, and the law, and afterwards applied himself to the study of divinity and the oriental languages, in which he greatly excelled. He had been educated in the principles of the Protestant religion, but on his return to Paris he became a convert to popery, through the arguments or persuasion of cardinal Perron. For some time he resided in the cardinal's house, afterwards he became a member of the congregation of the Oratory, and in this retreat he applied himself with the greatest assiduity to the study of literature, and from time to time presented the world with the various fruits of his labours. In 1626 he published, "Exercitationes de Patriarcharum et Primatum Origine, et Antiqua Censurarum in Cleros praxi," which he dedicated to pope Urban VIII. He was next employed in a new edition of the "Septuagint," after the Vatican edition, published at Rome by order of pope Sixtus V. in 1587. This edition was published, in 1628, under the title of "Biblia sacra LXX. Interpret. Græcè et Latine; cum Novo Testamento Gr. Lat. &c." in three volumes folio, which is now very rare. In 1631 he published "Exercitationes in utrumque Pentateuchum Samaritanorum," the principal object of which is to prove the superior integrity of the Samaritan to that of the Hebrew text. This was followed by his edition of the Samaritan Pentateuch, with a Latin version in the Polyglot of Le Jay. In the year 1635, M. Morin published the first part of another work in support of the superior integrity of the Samaritan to the Hebrew text. The second part of this work did not make its appearance till after the death of the author. The reputation of this writer stood so high with the clergy of France, that the prelates in their assemblies were frequently determined by his advice, on subjects of the greatest difficulty and importance. His fame extended to Rome, and he was invited by Urban VIII. into that city, with a view of affording his assistance in promoting an union between the Latin and Greek, as well as the other oriental churches. He arrived at Rome in the year 1639, and met with a very friendly

reception from cardinal Barberini, who introduced him to the learned men of the city, and particularly to Lucas Holstenius, and Leo Allatius, the former, keeper of the Vatican, and the latter, of the Barberini library. In these vast repositories of learning he met with ample stores for the gratification of his literary curiosity, but he had not been occupied more than nine months in the business for which he came, before cardinal Richelieu directed his superiors to recal him to France. He returned in 1640, and from this period spent his time in laborious study, and in the publication of many learned works. He died in 1659, at the age of sixty-eight, highly respected for the qualities of his heart, as well as for his great literary acquirements. In 1682 father Simon caused to be printed at London, "Antiquitates Ecclesiæ Orientalis," consisting of letters to and from Morin; to which is prefixed a life of Morin, supposed to be written by father Simon; in this work is inserted a list of his "Opuscula," to the number of eighteen articles. To Simon's life of our author the reader is referred for more particulars relating to Morin.

MORIN, JOHN, a French priest and philosopher, was born at Meung, near Orleans, in the year 1705. Of his early life we have no account, but in 1732 he obtained the professorship of philosophy at Chartres, and discharged its duties with uncommon zeal and assiduity for eighteen years. In 1750, as a sort of recompence for his services, he was, by the bishop, nominated to a canonry in his cathedral. He had some years previously to this published a treatise "On Universal Mechanism," and also "A Treatise on Electricity;" this was laid before the public in 1748, when the last named science was in the state of its infancy, and the work of Morin led him into a controversy with the celebrated abbé Nollet, who wrote strictures upon it. Morin replied to them, and with his answer he closed his labours as an author. His name and reputation stood high as a philosopher in the academies of sciences at Paris and Rouen, of both which institutions he was a correspondent. He pursued his experiments till his death in 1764, when he was about the age of 59.

MORIN, PETER, a man of letters, biblical scholar and critic, was born at Paris in the year 1531. His father had employment in the parliament, and as he intended his son for the same pursuits, he directed his attention, at a very early age, to the study of the civil law. At the same time he was carefully instructed in classical learning. When his judgment began to ripen, he became deeply enamoured with the study of the belles lettres, and afterwards applied himself diligently to the sacred scriptures, the fathers, and ecclesiastical antiquities. He went to Italy, at that period the grand resort of men of learning, where he was employed by Paul Manutius, the learned printer at Venice. From this city he removed to Vicenza, in 1555, where he taught the Greek language and cosmography; and from that place he went to Ferrara, where he was introduced to the cardinal, brother of Hercules, duke of Ferrara, with whom he lived some time. In 1559, he was desirous of paying a visit to Rome, when his father recalled him to France, where he wished him to enter at once into domestic life, and into the business of parliament, but he was too much attached to literary pursuits, to gratify the wishes of his relation, returned to Italy, and arrived at Rome in 1565. He examined the remains of ancient art and grandeur, and visited every place of celebrity. At Verona some notes upon St. Chrysostom's "Commentary on the Epistles of St. Paul" were communicated to him, which induced him to attend carefully to that work of the Greek father, and



to give a new version of it. His profound knowledge of ecclesiastical antiquities, and his high and deserved reputation for zeal and piety, recommended him to the esteem of St. Charles Boromeo. By command of the pope, Gregory XIII., he translated into Latin the speeches made in the assembly of the states of France, and wrote "A Treatise on Elocution and rhetorical Figures." The latter piece is said to have given Boromeo so much pleasure, that he sent for the author to Rome, and placed him in the academy of the Vatican. After this he employed his talents in writing a treatise "On the good Use or Abuse of the Sciences." He was entrusted by popes Gregory XIII. and Sixtus V. with the revision of the text of the "Septuagint," which was printed at Rome in 1578, and also with that of the "Vulgate Version," which appeared soon afterwards. On this occasion he wrote "A Letter to Pope Sixtus V. concerning the Septuagint," from which may be gathered the leading rules observed by him in the conduct of this work. Morin had also the superintendence of the editions of the "Decretals," and of "The Oecumenical Councils," which were printed at Rome in his time. He was author of several translations, and some original pieces, particularly of "Letters," which are noticed by Dupin. He died at Rome in 1608, at the age of 77. He has been applauded in very high terms on account of his piety, integrity, and disinterestedness, and for his zealous attachment to the interests of literature. He possessed great critical skill, a sound judgment, and a wonderful memory. Moreri.

MORIN, SIMON, a French fanatic, was born about the year 1623, at Riehemont, in Normandy, of poor parents, who, however, contrived to give him an education sufficient to enable him to obtain a living as a copyist. He wrote a fine hand, and going to Paris, he was taken into the office of M. Charron, as clerk, on account of his skill in penmanship. He soon betrayed symptoms of a deranged imagination, and attached himself to the *Illuminées*, who were numerous at Paris. In company with some of these people, he was arrested and thrown into prison, where his deportment was, in general, so inoffensive, that he was very soon set at liberty. He now gave himself out as an inspired teacher sent from God, and obtained the countenance of a vast number of followers as weak or as mad as himself. The police again interfered, and he was thrown into the Bastille, where he was confined nearly two years. He was liberated, and returned to his former companions. In solitude he had time to form his plans into a concerted scheme of proving himself the Messiah, coming a second time in his state of glory. His triumph was but of a short duration; he was imprisoned, most cruelly and barbarously treated, and at length, upon the charge of a vile spy, condemned to be burnt alive. Against this savage sentence, of a brutal court, he appealed to the parliament, but without success, and it was carried into execution when he was about forty years of age. Moreri.

MORIN, STEPHEN, a Protestant divine, was born at Caen, in Normandy, in the year 1623. He studied theology under the celebrated Du Moulin, and afterwards became minister of a congregation at his native place; but on the revocation of the edict of Nantes he retired to Holland, and was appointed professor of the Oriental languages, in which he was deeply learned at Amsterdam. He died in the year 1700, at the age of seventy-seven. He was author of "Dissertationes Octo, in quibus multa sacræ et profanæ Antiquitatis monumenta explicantur," and several other very learned pieces, the titles of which may be found in Moreri's Dictionary. He wrote the life of Bochart, which

was prefixed to the third edition of his very learned labours, published by Morin in 1692. Also the life of Le Paulmier, prefixed to the work of that learned man, entitled "Greciæ Antiquæ Descriptio," edited by Morin after the author's death.

MORIN, in *Geography*, a town of Hispaniola; 10 miles E. of cape François.

MORINA, in *Botany*, received its name from the celebrated Tournefort, who during his residence at Erzeron in Armenia, met with this new plant in one of his daily botanizing excursions, in the valley of the four mills near that town. "In one of these mills," says he, "we proceeded to name one of the finest genera of plants in the Levant; to which therefore we gave the name of a person highly estimable for his science and virtue, M. Morin, of the Royal Academy of Sciences, Doctor of Medicine of the faculty of Paris, who has since had the singular good fortune of raising this plant from seed in his garden, it having succeeded nowhere else. The flower seems proud to bear the name of M. Morin, who has always been passionately devoted to botany. Vaillant however would not adopt this name. Tourn. Voy. v. 2. 119. Cor. 48 t. 480. Linn. Gen. 18. Schreb. 24. Willd. Sp. Pl. v. 1. 152. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 66. Sm. Prodr. Fl. Græc. Sibth. v. 1. 18. Juss. 194. Lamarck Illustr. t. 21. (Diotheca; Vaill. Mem. de la Acad. des Sc. for 1722.)—Class and order, *Diandria Monogynia*. Nat. Ord. *Aggregata*, Linn. *Dipsacea*, Juss.

Gen. Ch. *Cal.* double. Perianth of the fruit inferior, of one leaf, cylindrical, tubular, permanent, its orifice bordered with upright, awl-shaped, spinous teeth, of which the two opposite ones are longest. Perianth of the flower superior, of one leaf, tubular, the size of the former, in two rather deep, obtuse, emarginate, upright, permanent segments. *Cor.* of one petal, two-lipped: tube very long, thread-shaped at the base, gradually dilated upwards, a little incurved; limb flat, obtuse; its upper lip rather the smallest, cloven half way down; lower three-cleft; all the segments rounded, uniform, the middle one rather the most prominent. *Stam.* Filaments two, bristle-shaped, parallel, curved, rather shorter than the limb; anthers erect, heart-shaped, distant. *Pist.* Germen globose, between the two perianths; style thread-shaped, parallel to the stamens, but rather longer; stigma capitate, inflexed. *Peric.* none. *Seed* solitary, roundish, crowned by the calyx of the flower.

Eff. Ch. Corolla unequal. Calyx of the fruit of one leaf, unequally toothed; that of the flower two-lobed. Seed one, crowned with the calyx of the flower.

1. *M. persica*. Persian Morina. Linn. Sp. Pl. 39. Sm. Fl. Græc. Sibth. v. 1. 20. t. 28. (*M. orientalis*; Mill. Dict. ed. 8. *M. orientalis*, carlinæ folio; Tourn. Cor. 48. Voy. v. 2. 120. t. 120.)—Native of Armenia, according to Tournefort; Linnæus says, of Persia near Isfahan, but we cannot find his authority. Mr. Hawkins informs us he gathered this fine plant on the mountains of Parnassus and Cyleni, in elevated fields, where the soil is rather rich, flowering in August. Dr. Sibthorp has left no mention of the place where he met with it. From plants raised formerly at Paris, the *Morina* was once in our gardens; but was killed both in England and France, by the hard winter of 1740, except that M. Du Hamel, according to Miller, saved it in his garden. The late Mr. Davall had it alive at Orbe in Switzerland, and, if we mistake not, M. Olivier brought some seeds from Persia, which vegetated at Paris.—The root is perennial, tap-shaped. Stem erect, straight, three feet high, perfectly simple, leafy, obscurely quadrangular, furrowed, downy; spongy and hollow within. Leaves oblong, narrow,



acute, generally smooth, pinnatifid; the lobes numerous, palmate, with strong spreading spines: radical ones erect, tapering at the base: those on the stem shorter, four in a whorl: the floral ones sessile, still shorter and broader. *Whorls* very numerous, axillary, many-flowered. *Flowers* erect, about two inches long, reaching from one joint to the next, extremely elegant, white, changing to pink before they decay; the tube hairy. Tournefort compares their scent to the honey-suckle. They form a singular combination with the thistle-like herbage.

MORINA, in *Gardening*, affords plants of the hardy herbaceous flowery perennial kind, of which the species cultivated is, the Persian or Oriental morina (*M. persica*).

*Method of Culture*.—This is increased by seeds or offsets from the roots. The seeds should be sown in the autumn in the places where the plants are to grow, as, from their having a strong tap-root, they do not bear shifting well. The ground in the bed or border near them should not be afterwards much disturbed, the plants being only kept clean. They mostly flower in two or three years after being raised.

In the latter mode the offsets should be slipped from the roots while young, and be planted out where they are to stand, in the latter end of the summer, being afterwards treated as those raised from seeds.

The plants decay to the ground in the autumn, new leaves being sent up in the spring; but the roots continue several years when not stirred, or injured by severe frosts.

These plants are highly ornamental in the principal beds and borders of pleasure-grounds and gardens.

MORINDA, in *Botany*, a name of hybrid, and scarcely allowable, derivation, from *morus*, the mulberry-tree, and *inda*, Indian, alluding to the aspect of the fruit, and its tropical origin. Linnæus took the name from Vaillant, seduced perhaps by its pleasing sound. Homer, we are told, sometimes nods, and any thing less than a Hercules might occasionally faint, in cleaning an Augean stable.—Linn. Gen. 94. Schreb. 127. Willd. Sp. Pl. v. 1. 991. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 375. Juss. 209. Lamarck Illustr. t. 153. Gærtn. t. 29. (*Roioc*; Plum. Gen. 11. t. 26.)—Class and order, *Pentandria Monogynia*. Nat. Ord. *Aggregata*, Linn. *Rubiaceæ*, Juss.

Gen Ch. *Cal.* Common receptacle roundish, collecting the flowers, which are sessile, into a globular head. Perianth scarcely observable, five-toothed, superior. *Cor.* of one petal, funnel-shaped; tube cylindrical; limb in five lanceolate, acute, flat, widely spreading segments. *Stam.* Filaments five, very short, inserted into the upper part of the tube; anthers linear, erect, nearly as long as the tube. *Pist.* Germen inferior; style simple; stigma cloven, rather thick. *Peric.* Berry nearly ovate, angular in consequence of pressure from those around it, abrupt, of one cell. *Seeds* two, convex on the outer side, flat on the inner.

Eff. Ch. Flowers aggregate, of one petal, five-cleft, superior. Stigma cloven. Berries aggregate. Seeds two.

Obs. It must be confessed that Jussieu has been much happier than Linnæus, in his determination of the natural order of this genus.

1. *M. umbellata*. Umbellate Morinda. Linn. Sp. Pl. 250; excluding the synonym of Rumphius. (M. n. 81; Linn. Zeyl. 34.)—Erect. Leaves lanceolate-ovate. Flower-stalks umbellate.—Native of the East Indies. Linnæus describes it as a tree, with leaves resembling those of *Cephalanthus*, opposite, ovate inclining to lanceolate, stalked, entire. *Umbels* sessile, each consisting of several equal stalks, bearing solitary heads of aggregate flowers, and terminating

the obtuse branches.—We have never seen an authentic specimen, nor do we find any figure. Professor David Van Royen has favoured us with a specimen of what he took for this plant, in which the remains of six umbellate flower-stalks terminate the branch, but all remains of fructification are gone. The leaves are obovate, pointed, entire, paler beneath, with a little glandular pubescence at the origin of each vein, as in both the other species; otherwise they are smooth on both sides, and not unlike *Cephalanthus*. *Stipulas* intrafoliaceous, tubular, close. It is very probably what Linnæus intended. Can this be Plukenet's t. 361. f. 5? or Lamarck's t. 153. f. 3?

2. *M. citrifolia*. Broad-leaved Morinda. Linn. Sp. Pl. 250. Ait. n. 1. (M. n. 82; Linn. Zeyl. 34. Cada Pilava; Rheede Hort. Malab. v. 1. 97. t. 52. Bancodus latifolia; Rumph. Amb. book 5. 158. t. 99.)—Stem arboreous. Flower-stalks solitary, lateral, smooth. Leaves smooth, elliptic-oblong.—Native of the East Indies. The Linnæan specimen, certainly the plant of Rheede, has very smooth laurel-like leaves, elliptic-oblong, four or five inches in length, acute at each end, rather oblique, with one rib and many transverse veins; which last are glandular, with a sort of pubescence, where they separate from the mid-rib. *Flower-stalks* opposite to one of the leaves, taking the place of a leaf which is wanting, smooth, about twice the length of the *footstalks*. *Head* oblong. *Corolla* externally smooth. Rheede says this is a tree, growing in sandy, stony places. The aggregate fruit is ovate, two or three inches long, foetid and bitter.

We have from Dr. Roxburgh, under the same name, what seems a different species; the leaves being smaller, more ovate and pointed, all of them opposite, the flower-stalks axillary, and the limb of the corolla externally hairy. Indian botanists, who may have opportunities of comparing more perfect specimens, must decide whether this be more than a variety. M. Poiret, in Lamarck Dict. v. 4. 315, makes mention of another variety, or probable species, confounded under *citrifolia*, which may possibly be what we shall next describe.

3. *M. pubescens*. Downy Morinda.—Flower-stalks lateral, hairy. Leaves elliptic-lanceolate, tapering at each end, roughish. Heads globular. Corolla swelling upwards, nearly smooth.—Native of the island of Mauritius. Communicated by Thouin to the younger Linnæus. The stem is woody, with twisted, and perhaps trailing, branches, downy when young. Leaves three inches long and one broad, lanceolate, somewhat obovate, tapering much at each end, paler beneath, roughish on both sides with minute points; the ribs and veins hairy. *Flower-stalks* lateral, opposite to a solitary leaf, hairy, an inch long, solitary except at the end of the branch, where there are two, one of them being terminal, the other opposite to the uppermost leaf. *Head* globose, small, of but few flowers. *Corolla* above an inch long, slightly rough at the tips and edges of the segments only.

4. *M. Roioc*. Procumbent Morinda. Linn. Sp. Pl. 250. Ait. n. 2. Jacq. Hort. Vind. v. 1. t. 16. (*Roioc humifusum*, fructu cupressino; Plum. Gen. 11. *Periclymenum americanum*, e cujus radice fit atramentum; Pluk. Phyt. t. 212. f. 4.)—Stem procumbent. Leaves obovato-lanceolate, smooth; with axillary downy glands to the veins. Flower-stalks very short, lateral or terminal. Tube of the corolla cylindrical, roughish.—Native of South America and the West Indies, abundantly. The stem is woody, long, and trailing, growing erect when supported by other bushes, much branched. Leaves about two inches long, obovate, narrow, acute. Flowers white, in little round heads, on short smoothish



smoothish stalks, sometimes opposite to a leaf, but more generally terminal. The root is reported to yield a yellow or purple colour, becoming black with iron, which probably may be of use in dyeing. Jacquin says it may be procured in any quantities.

5. *M. axillaris*. Axillary Morinda. Lamarck Dict. v. 4. 315.—Leaves oval, bluntish. Heads axillary, sessile. Tube of the corolla very short.—Native of Madagascar. "Branches long and pliant. Leaves somewhat wrinkled; paler beneath. Flowers small, with a very short tube, the head less crowded than in the rest of the species, and disposed in somewhat of a whorled manner. The leaves vary in acuteness." Pourret in Lamarck.

6. *M. retusa*. Blunt Morinda. Lamarck Dict. v. 4. 316.—Arboreous. Leaves oval, abrupt. Heads sessile, terminal.—Native also of Madagascar. "Very distinct from the former. Branches hard, knotty, forked. Leaves much more crowded than in any of the foregoing, oval; obtuse and abrupt at their summit; contracted at the base." The Flowers are described as perfectly terminal, in a round sessile head, and yet in the specific character they are called lateral.

We adopt this, as well as the last, entirely from Pourret.

His fourth species, *M. muscosa*, Jacq. Amer. 65. t. 45, is *Cephaelis muscosa*, Swartz. Ind. Occ. v. 1. 442. Willd. Sp. Pl. v. 1. 979.

MORINELLA, TURNSTONE, or Sea-Dotterel, in Ornithology. See TRINGA Morinella.

MORINELLUS, DOTTEREL. See CHARADRIUS Morinellus.

MORINGA, in Botany. See HYPERANTHERA.

MORINGEN, in Geography, a town of Germany, in the principality of Furstenberg; 26 miles N.W. of Constance.—Also, a town of Westphalia, and principality of Calenberg, seated on the Mohr, which runs into the Leine, and containing two churches; 10 miles N.N.W. of Gottingen. N. lat. 51° 38'. E. long. 9° 55'.—Also, a town of Bavaria, four miles S. of Friedberg.

MORINI, in Ancient Geography, the name of a people who inhabited the sea-coast in the northern part of France, from Montreuil-sur-Mer to Calais; and hence Virgil calls them "extremi hominum." However, they seem to have advanced into the interior of the country, for Ptolemy assigns them for their capital the town of Ternania, and they also possessed on the sea, towards the coast, Gessoriaeam. Their name was derived from the word "Mor," signifying in Celtic the sea, and thus designates a maritime people. Some authors have ascribed to the Morini the diocese of Tournay; but M. d'Anville was of opinion that this belonged to the Nervii. The country of the Morini was in a great measure covered with forests, lakes, and islets, encompassed by marshes; and hence they were enabled to maintain their liberty. Cæsar at length subdued them and subjugated them to the Atrebatii. Pliny says that their country swarmed with geese, and that these furnished a principal article of merchandise. He adds that their linen cloth was also a commodity in which they had considerable traffic.

MORINIERE, ADRIAN CLAUDE LE FORT DE LA, in Biography, a French writer, was born at Paris in 1695, and died in 1768. He was author of many works, of which the principal are, 1. "Choix des Poésies Morales." 2. "Bibliothèque Poétique." 3. "Passé-temps Poétiques, Historiques, et Critiques."

MORION, in ancient Armoury, a kind of open helmet without visor or beaver, somewhat resembling a hat: it was

commonly worn by thearquebussiers and musqueteers. See MORIAM and POT.

MORION, in Botany, a name given by the ancients to a kind of nightshade. The ancient Greeks, Theophrastus and others, called all the nightshades in general by the name *strychnus*. Some of these they said were poisonous, and others esculent. The poisonous were of two kinds, some bringing on sleepy disorders, and others making the patient mad.

The esculent kind was the *pomum amoris*, or love-apple, eaten at this time by the Portuguese and many other nations, and by some in England. Some after-writers use the word morion as a distinctive name for those kinds of nightshade which caused sleepy disorders; and after these some used it as the peculiar name of one species, and others as the name of the male mandrake of Dioscorides, whose fruit, according to that author, was commonly eaten by the shepherds; but when taken too largely, threw them into sleepy disorders. From this word morion has come, in all probability, the Latin name *morella*, given at first to the *pomum amoris*, or love-apple; and afterwards, according to Æmilius Mæcer, to all the nightshades; for he expressly says, that those plants which the Greeks called *strychna*, the Latins called *morella*; and we find that the old Greeks called all the nightshades *strychna*.

MORION, in the Natural History of the Ancients, a name given to one of the semi-pellucid gems, more commonly called *pramnion*. It is a stone appearing externally only of a fine deep black; but when held up against a candle, or against the sun-shine, giving a very beautiful red, in different degrees, from that of the hyacinth to that of the amethyst or carbuncle.

MORIS, in Geography, a town of New Mexico, in the province of Mayo; 100 miles N.E. of Santa Cruz.

MORIS's, or Morris's Bay, a bay on the S.W. coast of Antigua; four miles W. of Falmouth harbour.

MORISA, a town of Japan, in the island of Nippon; 165 miles S.W. of Mexico. N. lat. 34° 6'. E. long. 131° 39'.

MORISCOES, an appellation given by the Spaniards to the Moors of Granada, in order to distinguish them from the Moors of Barbary. The expulsion of these people from Spain forms an important event in the history of that country, and also in the history of persecution; and it therefore deserves to be recorded, with a detail of the leading circumstances that attended it. It is well known that when the city of Granada was taken by king Ferdinand of Aragon and queen Isabel of Castile, in the year 1492, the Moorish government in Spain, which had lasted above 700 years, terminated; and yet the Moors did not immediately leave the country. The body of the people, not only of the kingdom of Granada, but also of Valencia, though conquered by the Christians in 1236, and of Murcia, conquered by them in 1265, belonged to that race; and besides these, others were dispersed in great number over Castile, Estramadura, Aragon, Catalonia, &c. All these Moors maintained their separation from the Spaniards, by an obstinate adherence, not only to the language, habit, and customs of their ancestors, but to their religion likewise, which was the Mahometan; few or none of them, in a long series of years, having been converted to the Christian faith, by all the efforts of the Spanish friars for this purpose. The Spanish princes, apprised of the danger that was likely to result from the connection that was likely to subsist between the Moors of Barbary and those of their own country, so nearly situated with respect to one another, made every attempt in



their power to dissolve their natural attachment, cemented by similarity of religious profession; and with this view they employed the ecclesiastics in vigorous measures for converting them to Christianity. The friars, failing in their casual endeavours, for accomplishing the object recommended to them, represented the Moors as an obstinate and hardened set of people, who were not to be overcome by arguments, nor by any other methods, unaccompanied with violence. Accordingly they advised the princes either to banish the Moors, or to make them all slaves, if they refused to become Christians; or, at least, to take all their children from them, and baptize them, so that the next generation might become Christians. The council of Toledo, however, expressly prohibited the compulsion of infidels to be baptized; and Thomas Aquinas, and most of their other divines, declared it to be unlawful to baptize the children of infidels without the consent of their parents; and, therefore, the methods proposed by the friars were not adopted: more especially, as the Moors, when they possessed the dominion of the country, had never forced any of their Christian subjects to change their religion, and king Ferdinand, upon the surrender of Granada, had engaged himself by oath, if the Moriscoes wished to remain in Spain, not to molest them on account of their religion. The Jews, however, not having been protected by any such engagement, were ordered by a royal edict, within three months after the capture of Granada, if they would not be baptized, to depart with their families in the course of four months, on pain of death; upon which many of them removed, and those who remained, after the expiration of the stipulated term, were stripped by the king of all their property, and sold to his subjects for slaves. It is said that above 800,000 men, women, and children, were driven out of Spain at this time. As to the Moors, it was found that, in the year 1499, few of those who inhabited Granada had been converted to Christianity; and therefore Ximenes, archbishop of Toledo, was charged to pursue some course for converting the Moors to the Christian faith. The archbishop, determined to succeed in every measure which he undertook, began by mild treatment to engage in his interest the chief men among the Moors, some of whom became converts; but others were found invincible by bribes and promises. The prelate changed his plan, and had recourse to severe methods of conversion, ordering the irreclaimable to be loaded with chains, thrown into dungeons, and treated as the most notorious malefactors. Irritated by this cruel treatment, the Moors took up arms; but their insurrection being suppressed, 50,000 of them, inhabitants of the city of Granada, purchased their lives by consenting to be baptized; and the archbishop so far triumphed in his success, as on his departure not to have left one professed Mahometan in the city. The Moors of the country were alarmed, and fortified themselves among the mountains, resolving to die Mahometans with their swords in their hands, rather than submit to be baptized by compulsion, as their countrymen had been in the city; but though many of them, with their women and children, were put to the sword, others collected together in a formidable body, which called forth the interposition of the king in person, who being joined by a powerful host, very rapidly reduced all the Moorish towns that were in arms; obliging all the inhabitants to purchase their lives by consenting to be baptized. The Moors that were still in arms among the fortresses of the mountains petitioned the king to allow them to transport themselves to Barbary, offering to pay ten dollars *per* head for every one that embarked: the king's want of money permitted those who could pay their ransom to depart, and those who were under a necessity of remaining were

forced to be baptized. In a few months, above 200,000 men, women, and children were converted by the king and the archbishop of Toledo from the Mahometan to the Christian profession, though it is said that scarcely one in that large number was truly converted to the Christian faith. The Inquisition, regarding these forced baptisms as good and valid, exercised its usual cruelties on those Moors who were convicted of having afterwards returned to Mahometanism. Not fewer than 100,000, living and dead, present and absent, had been condemned for apostacy by the inquisition of Seville in the space of forty years; of which number 4000 were burned, and 30,000 were reconciled, the rest having made their escape into Barbary. During the remaining part of the reign of Ferdinand and Isabel, and the whole reign of Charles V., we hear little more of the Granada Moriscoes, than that they universally continued to be Mahometans, and manifested an extraordinary aversion to Christianity, which aversion was increased by the fiery zeal of the inquisition. Thus the friars went on preaching and the inquisitors went on burning the Moriscoes, until the year 1568; when Philip II., by advice of his council and ecclesiastics, published certain laws, which were framed with a view of extinguishing in the Moriscoes the memory of their being descended of the Moors; the remembrance of which was thought to contribute not a little to their obliquity in the religion of that nation. The rigorous execution of these laws, induced the Moriscoes to seek relief from the grand signior and the Moors in Barbary; who sent 800 Turks, with a great quantity of arms and ammunition, into the kingdom of Granada, who were joined by the Moors from all parts, taking up arms and renouncing the profession of the Christian religion. Against these the king ordered his troops to march; but in the course of eighteen months, he was able neither to conquer them nor to starve them among the mountains. At length, however, they were totally subdued, and compelled to leave the kingdom of Granada. From this time they were dispersed over the kingdom of Castile, and some other inland provinces, in which they and their posterity continued until the time of their general expulsion, in the year 1610. Notwithstanding all the diligence and cruelties which were used to reconcile these Moriscoes to Christianity, they and their posterity still continued as much Mahometans in their hearts as ever they had been.

This was also the case with regard to the Moriscoes of the kingdoms of Valencia and Aragon, who continued professed Mahometans for 300 years, after they were conquered by the Christians; and who, having been all baptized by extreme force, remained Mahometans in their hearts till they were all expelled Spain. The Spanish historians are not agreed as to the number of the Moriscoes that were driven from Spain in the year 1610. Some say they were a million, others that they were 900,000; but the greater number of writers concur in asserting, that they were 600,000 men, women, and children, besides those that were slain or detained. These Moriscoes were industrious and peaceable inhabitants of Spain, and constituted the strength of the kingdom by their application to agriculture, manufactures, and trade. The expulsion of them was such a fatal blow to Spain, that she has not to this day, nor, indeed, is ever likely to recover it. Soon after this disastrous event, Spain began to feel its bad effects, as we may infer from a memorial delivered in 1618, to Philip III. by a Junta that had been assembled by the king, to consider what remedy might be applied to the ruined state of his kingdom. The duke of Lerma, the chief author of the depopulating expulsions, was turned from court and deprived of all his offices; his chief confidant and counsellor, Don Rodrigo Calderon, was committed



committed to prison, and after imprisonment for 2½ years, put publicly to death in the great plaza of Madrid; and the archbishop of Toledo, who had been also a zealous promoter of the expulsions, died, a few days after his brother the duke was dismissed from court, merely of grief and discontent. And king Philip, who died soon after, is said by a famous Spanish historian, to have had his conscience upon his death-bed overwhelmed with horrors, which has been attributed to his concern in these expulsions, by means of which, in violation of all the laws of religion and humanity, he had plunged more than 100,000 families in distress and misery; a reflection that must have been agonizing to a person summoned by death to answer for his conduct before the divine tribunal, where, as an excellent writer expresses himself in immediate reference to this subject, "they are to have judgment without mercy, who have shewed no mercy to their fellow creatures." In the instance above mentioned, we perceive the injurious effects of persecution, with respect to the internal prosperity of a country. A similar instance occurs in the revocation of the edict of Nantes. Geddes's *Tracts*, vol. i.

MORISON, ROBERT, in *Biography*, a botanist of the 17th century, whose name is familiar to all, from the popularity of his principal work as a book of reference, was born at Aberdeen in 1620. Being designed for the church, he devoted himself to the study of mathematics in that university; but was diverted from such pursuits by a taste for physic, and especially botany. These studies in their turn gave way, for a time at least, to his loyalty, and he actually became a soldier in the service of king Charles. After receiving a dangerous wound in the head, in a battle near his native town, which for a while disabled him, he retired, like many of his countrymen after the ruin of the royal cause, to Paris. Here he became tutor to a young man of some fortune, while he sedulously cultivated the studies necessary for his profession, and took the degree of doctor of physic at Angers, in 1648. Botany however was his most favourite pursuit; for it appears that as soon as a prospect opened of his deriving a living from that source, he "threw physic to the dogs." M. Robin, who had then the care of the royal garden at Paris, conceived for favourable an opinion of Morison, that he recommended him to the patronage of Galton, duke of Orleans, and he was entrusted with the care of that prince's garden at Blois, accompanied by a handsome salary. He held this charge from the year 1650 to 1660, when the duke died. During that period, he devoted himself to the study of theoretical as well as practical botany. He began to plan a system, on the subject of which his royal patron is reported to have delighted to confer with him. He was also dispatched on several botanical expeditions, to various parts of France, for the purpose of enriching the garden. A catalogue of this garden was printed in 1653, by Abel Brunyer, physician to the duke; of which Morison afterwards published at London, in 1669, a new and enlarged edition, accompanied by a regular and professed criticism of the works of Calpar, and John Bauhin. For this last performance he has perhaps incurred more blame than he justly deserves. Haller terms it "an invidious work," though he says the remarks are for the most part true. Morison gives to these great men all the rank and honour which their eminent learning and industry deserve; and while he proceeds, without ceremony, to a plain and simple indication of their mistakes or imperfections, he expresses a wish of having his own errors, of which he does not doubt the existence, likewise pointed out. The *Hortus Blesensis* is disposed in alphabetical order, and accompanied by a double dedication, to king Charles II., and James

duke of York, to whom its author had become known in France. When king Charles resumed the sceptre of his fathers, Morison, who the same year was deprived, by the death of the duke of Orleans, of his chief attachment to France, gladly obeyed the summons of his royal master, to settle in England. The minister Fouquet is said to have offered, in vain, the most liberal temptations to retain him. On arriving in London, he received the titles of King's Physician, and Royal Professor of Botany, with a salary of 200*l.* a year, and a house, as superintendant of the royal gardens. He was also elected a Fellow of the College of Physicians.

Whether the gardens of Charles II. were very botanical, or whether they flourished much under the care of the subject of this article, does not appear. He was himself transplanted to a more promising scientific station, nine years afterwards, when he became Professor of Botany at Oxford, and was again dubbed Doctor of Physic, his foreign degree giving him no rank in that university. He gave a course of lectures there in the autumn of 1670; as well as in several successive years, as long as he lived. He had for some time been meditating, and collecting materials for, a great universal work on botany. Of this he published an excellent specimen in 1672, being a methodical arrangement of umbelliferous plants, in folio, accompanied with plates. He takes the leading characters of these plants from the seeds, though he admits under the same denomination a tribe of different genera, whose inflorescence in some measure, though very slightly, agrees with the true *umbellata*, but which are otherwise totally different, such as *Valeriana*, *Thalictrum*, *Spiraea*. This is certainly as great an error as ever the Bauhins committed.

In 1674, Morison edited at Oxford a thin quarto, from the manuscripts of Boccone, describing a number of new plants from Sicily, Malta, France, and Italy; a work illustrated with 52 plates, 45 of which were re-engraved, after some, less accurately finished, under Boccone's inspection. The figures, though diminished, are in general very expressive, and many of the plants are no where else represented.

Morison's great work, entitled *Plantarum Historia Universalis Oxoniensis*, appeared in 1680, in one volume folio, comprising five sections of herbaceous plants, with numerous plates, in each of which 12 plants are commonly delineated. This was called the second part of the work; the first, consisting of trees and shrubs, having been postponed, as the most easily to be finished at any time; but it never appeared, nor is there any certainty of its ever having been written.

A second volume, called the third part, was published in 1699, long after the author's death, by Jacob Bobart. This comprehends 10 sections more, and concludes the system, as far as regards herbaceous plants. Of these 10 sections, four only were finished by Morison; the rest having been the performance of the editor. The plates of grasses, which make a part of the eighth section, are remarkably good, and are universally cited by succeeding writers. The other figures throughout these volumes, though in general use, are for the most part not original, nor are they entitled to the praise of accuracy as copies. The drawing of many of them is defective; their outline unlike the originals; parts are improperly added, or carelessly misrepresented; and the whole betray signs of haste and frequent inattention; defects indeed not altogether avoidable, in so great an undertaking. The editor of this latter volume claims for the author great honour as the inventor of a system. It cannot be denied however that the outlines of Morison's system are evidently to be traced in the work of Cæsalpinus, published in 1583.



and with which, it appears from his dedication to the Sicilian Plants of Boeckone, he was well acquainted, though he no where acknowledges the slightest obligation to that great man, any more than to Conrad Gefner, whose interesting remarks on the same subject, in his letters, published in 1577, could scarcely have been unknown to a person so conversant with that subject. It is true that Morison wanders much from the plan of those two fathers of systematic botany, inasmuch as he takes into his principles of arrangement certain vague ideas respecting the habit or qualities of plants; whereas they strenuously taught the importance of relying on the fructification. In proportion as he recedes from this principle, he loses himself in endless mazes, scarcely ever gaining any thing, even on the score of natural affinity. His very first class, entitled *scandentes*, or climbing plants, has no foundation in nature, nor any technical character. Under the second, *legumina*, he subjoins an order, as akin to *Trifolium*, which agrees with, or rather resembles, that leguminous genus, merely in having ternate leaves. In this order are *Fragaria*, *Alchemilla*, and *Epimedium*! We should prove as invidious as his own strictures on the Baulins, were we to try him by rules which have been discovered since his time, but we cannot withhold the remark of Linnæus, that "in laying aside those principles of Cæsalpinus, which are deduced from the embryo and the receptacle, Morison has so far deteriorated his own system." The same eminent critic justly adds, that "if Morison has omitted to acknowledge his obligations to Cæsalpinus, following systematic writers, who have more nearly traced his steps, have been equally silent in his praise."

This great work could scarcely have been published at the expence of a private individual, had he not been liberally assisted by the contributions of his opulent Oxford friends, who took a patriotic interest in the performance. The original specimens, such at least as refer to Bobart's share of the undertaking, are still preserved, and serve to remove every difficulty in case of an incomplete description or figure. Such assistance is very requisite, as to the cryptogamic part of the work, though authors have much commended those plates.

The labours and studies of Morison were cut short by an accidental death, similar to that of Tournefort, but more immediate. He received an injury from the pole of a coach, in crossing one of the London streets, Nov 9, 1683, and died next day, at his house in Green-street, Leicester-square, aged 63. He was buried in the neighbouring church of St. Martin's-in-the-Fields.

A portrait prefixed to the posthumous volume, indicates Morison to have been, as Bobart describes him, a man of a healthy bodily frame, and of plain and open manners. He is recorded as having cultivated science for its own sake, with much less regard to his personal emolument, than to the public good, a sordid love of gain having made no part of his character.—Morison's Works.—Haller Bibl. Bot.—Pulteney's Sketches of the Progress of Botany. Linn. Classes Plantarum.

MORISON'S Haven, in *Geography*, a sea-port of Scotland, on the S. coast of the Frith of Forth, with a custom-house; to which Musselburg, North Berwick, and some other ports, are creeks: the principal article of trade is salt, for the preparation of which there are many pans in the neighbourhood; one mile from Prestou-Pans.

MORISONIA, in *Botany*, named by Plumier in honour of the celebrated Robert Morison, Professor of Botany at Oxford. (See MORISON.) Plum. Gen. 36. t. 23. Linn. Gen. 260. Schreb. 472. Willd. Sp. Pl. v. 3. 844. Jacq. Amer. 156. Mart. Mill. Dict. v. 3. Cavan. Diss. 308.

Swartz. Obs. 272. Juss. 244. Lamarck Illustr. t. 595. Gærtn. t. 78.)—Class and order, *Monadelphia Polyandria*. Nat. Ord. *Putamineæ*, Linn. *Capparidæ*, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, ventricose, bursting, half cloven, spreading at the mouth, obtuse, not permanent. Cor. Petals four, obtuse, rather oblong. Stam. Filaments numerous, awl-shaped, shorter than the corolla, united at the base into a sort of funnel; anthers oblong, erect. Pist. Germen superior, stalked, ovate; style none; stigma capitate, flattish or convex, minutely umbilicated. Peric. Berry stalked, globular, with a hard, smooth bark, of one cell. Seeds numerous, kidney-shaped, imbedded in pulp.

Obs. Linnæus originally placed this genus in the class *Polyandria*, where professor Swartz is inclined to let it still remain, and even to sink it in the genus *Capparis*, from which it only differs in not having a four-leaved calyx, and in the union of its filaments.

Ess. Ch. Calyx simple, cloven. Corolla of four petals. Pistil solitary. Berry stalked, of one cell and many seeds, with a hard bark.

1. *M. americana*. Linn. Sp. Pl. 719. Plum. Ic. t. 203. Jacq. Amer. t. 97. Cavan. Diss. t. 163.—Native of the warmer parts of America, especially the West Indies, in dense mountainous woods, where it bears flowers in July, and fruit in November. In Martinico it is called *Bois Mabouia*, or Devil's-wood.—This is an upright, rather inelegant tree, about fifteen feet in height. Trunk straight, much branched. Leaves alternate, oblong, either blunt or pointed, entire, veined, shining, coriaceous, about a foot long, on round sessile stalks, thickened at the base and tip. Flowers about three or four together on a stalk, scattered about the old and young branches, of a dirty white, slightly fragrant, scarcely an inch in diameter. Fruit brown, with rusty-coloured dots; the pulp is whitish, but not eatable. The segments of the calyx are generally unequal, and the number of stamens about twenty.

MORISOT, CLAUDE BARTHOLOMEW, in *Biography*, a French writer, was born at Dijon in 1592, and died in 1661. He wrote, among other pieces of reputation at the period in which he flourished, "Peruviana, or the secret History of Cardinal Richelieu, Mary de Medicis, and the Duke of Orleans." Moreri.

MORKESTORF, in *Geography*, a town of Austria; 9 miles S. of Laab.

MORLAAS, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Pau; 7 miles E.N.E. of Pau. The place contains 1632, and the canton 10,007 inhabitants, on a territory of 250 kilometres, in 32 communes.

MORLACCA, a range of mountains on the coast of Dalmatia, extending from Segna to Fiume, and the borders of Carniola.

MORLACHIA, a mountainous country of Europe, situated between Dalmatia, of which it has been reckoned a part, and Croatia, and extending about 100 miles in length, and 25 in breadth. Its chief town is Segna. Part of the country has been subject to Venice, and part to Turkey. A mutual animosity subsists between the inhabitants of the coast and those of the inland country; and the difference in dialect, dress, manners, and customs between them, seems to indicate that they have sprung remotely from a different origin. Some of the Morlachi are fair, with blue eyes, a broad face, and flat nose; while others have dark coloured hair, a long face, tawny colour, and a tall stature. They differ also in mind as well as body; those about Kolar being generally mild, respectful, and tractable, and those of Vergoraz being



being furly, proud, bold and enterprizing. Robberies are frequent, and especially among the Haiduks, many of whom have retreated among the woods and caves of the mountains on the confines; but a traveller, escorted by a couple of these honest fellows, is quite safe; for although they form a banditti, they will never betray him. Those Morlachi, who live at a distance from the sea-coast and garrisons, are honest and faithful, influenced by mild treatment, grateful for kindness, ready to requite it, and singularly hospitable, so as even to neglect all attention to domestic economy. Their friendship is equally sincere and durable; but their mutual quarrels, when they occur, are inextinguishable, descending from father to son, and from one generation to another. The Morlachi, whether they be of the Roman or the Greek church, have singular ideas about religion; and they are firmly persuaded of the reality of witches, fairies, enchantments, nocturnal apparitions, and fortileges, and also of the existence of vampires, to which, as in Transylvania, the sucking of the blood of infants is imputed: and the boldest Haiduc would fly with unaccountable terror from the apparition of a spectre, ghost, and such imaginary goblin. Many traces of the innocence and natural liberty of the pastoral ages are perceived among those Morlachi who live most remotely from the Venetian settlements. The women are attentive to their persons till they are married; but afterwards they abandon themselves to that kind of negligence which seems to be a return for the contempt with which they are treated. Their nuptial feasts are prolonged for several days, according to the ability and prodigality of the parties interested in them: and the bride is often enriched by the presents which she receives on these occasions. The ordinary nourishment of the Morlachi is coagulated milk, and the whey is their common and favourite drink. Their best dish to a guest is new cheese, fried with butter; and they make cakes of millet, barley, Indian corn, and sometimes of wheat: they prepare cabbages similar to those used in Germany; and roots and herbs, which they find in the woods, serve as part of their cheap and salutary diet; but garlic and onions are peculiarly agreeable to these people, and roast meat is their most luxurious dish. Those that are in the most easy circumstances have no other bed except a close blanket, made of goats' hair, after the Turkish fashion; and they sleep between two blankets of this manufacture, without sheets or any other bedding. Their household furniture consists of a few simple articles; their houses are low and mean, seldom covered with slates or tiles, and their fire-place is situated in the middle of the cottage, and the smoke escapes at the door. In their lamps they burn butter instead of oil, but their common substitute for candles is cleft fir. Upon the whole, the richest Morlachi are in a state very little advanced above that of savages. Over the dead the family weeps and howls; and persons whisper in the ears of dead persons, pretending to give them commissions to the other world; the body is then covered with a white cloth, and carried to church, where they renew their lamentations, and the praises of the deceased are sung by the relations, or others appointed for the purpose, their songs being accompanied with weeping. After the corpse is interred, the whole company return to the house, where the funeral ceremony terminates with an odd mixture of feasting and lamentation.

MORLAIX, a town of France, and principal place of a district, in the department of Finistère, situated on a navigable river, which renders it a place of trade; its harbour is defended by a fort, erected on an island: the town contains three churches, and 9000 inhabitants; the canton has 15,125, on a territory of 135 kilometres, in 5 communes. N. lat. 48° 34'. W. long. 13° 45'.

MORLAND, GEORGE, in *Biography*, was the pupil of his father, Henry Robert Morland, an indifferent painter of portraits, and subjects of domestic life. He was born in 1764, and at a very early period exhibited so strong an inclination to painting, that he very soon surpassed his teacher, and assisted to maintain his family, then involved in poverty.

Had he been born under more favourable circumstances, it is not improbable that a liberal cultivation of his mind would have enabled him to succeed in a more exalted taste of subjects than those he fixed upon, and to which his early associations no doubt were the guide. So much are we the creatures of habit, that it requires a more than usual scope of the reasoning powers, or of fortunate incidents, to draw our affections from the scenes of youthful life; or lead us to see the folly even of vice, when exhibited in the examples of those who surround us from the cradle.

Such was the unhappy lot of Morland. His parents were people of irregular habits, involved in distress, obliged to labour as they could for an uncertain supply of bread, and mixing with the low and the vulgar. Thus our artist was initiated very soon into the mysteries of the gin-shop, the ale-house, and the stable, and in these abodes of vice and misery, he unfortunately made his selection of existence and of study. Though thus irregular, yet, aided by a natural power to perceive the beauties of colour, and having acquired by his early practice a ready hand in the exercise of the pencil, he produced a number of works possessing very striking beauties. His favourite subjects were interiors of stables, pig-styes, farm-yards, doors of public-houses, &c. these he touched with great freedom and ease, and frequently with very beautiful colour. Some of his smaller pictures of pigs wallowing, or surrounded by young ones, playing or sucking, are master-pieces of their kind. The agreeable hue he gave to them, and the familiarity of his subjects, procured him considerable employment, and afforded him the means of dissipation; in which unhappily he indulged to excess, and soon so far surpassed those means, that he fell into debt, and was confined in the king's-bench prison. Here his talents were laid under contribution by framemakers, picture-dealers, and others, who meanly taking advantage of his weak addiction to liquor, indulged his caprice and his wants; taking in return the ingenious productions of his pencil. These they sold again to great profit, and when some of them, more speculative than the rest, released him from imprisonment, it was only to immerse him in a private house, and take to themselves all the benefit of his labours: preventing any knowledge to the world of the place where he resided, and keeping him in almost a constant state of intoxication. It could not be expected, that in such a mode of existence the vital spark should long support the bodily frame; and, consequently, at an age when, in men of proper conduct, the physical and mental powers are in a state of maturity, he fell into decay, and a premature dissolution closed his mortal course. He died in October 1804, in the fortieth year of his age.

MORLAND, Sir SAMUEL, an English statesman, was born in some part of Berkshire, but of his early life nothing is recorded. He was under-secretary to Thurlow, and employed by Cromwell in several embassies, though he had been in great favour with Charles I.: and for the services which he rendered that king, was honoured with the title of baronet. He wrote a work, which was published in an octavo volume, entitled "*Urim of Conscience*." His son was master of mechanics to Charles II., and invented the speaking-trumpet; a fire-engine; a capstan, to heave up anchors; and two arithmetical machines, of which he published a description, under the title of "*The Description*" and:



and Use of Two Arithmetic Instruments: together with a short Treatise, explaining the ordinary Operations of Arithmetic, &c. Presented to his most excellent Majesty, Charles II., by S. Morland, in 1662." This work, which is exceedingly rare, but which has been in the hands of the writer of this article, is illustrated with twelve plates, in which the different parts of the machine are exhibited; and whence it appears that the four fundamental rules in arithmetic are very readily worked, and, to use the author's own words, "without charging the memory, disturbing the mind, or exposing the operations to any uncertainty." That these machines were at the time brought into practice there seems no reason to doubt, as by an advertisement prefixed to Mr. Morland's work, it appears that they were manufactured for sale by Humphry Adanson, who lived with Jonas Moore, esq. in the Tower of London.

In this place, having omitted it under the article ARITHMETIC, we may just notice that earl Stanhope, about thirty years since, invented two machines for the like purposes as those of Mr. Morland were intended, and it is said his lordship, when proposing a plan to parliament for the reduction of the National debt, verified the truth of all his calculations by means of those instruments, of which the following is a brief description. The smallest machine, which is intended for the first two rules of addition and subtraction, is not larger than an octavo volume, and by means of dial-plates, and small indices moveable with a steel pin, the operations are performed with undeviating accuracy. The second, and by far the most curious instrument, is about half the size of a common table writing-desk. By this, problems in multiplication and division, of almost any extent, are solved without the possibility of a mistake, by the simple revolution of a small winch. The multiplier and multiplicand, in one instance, and the divisor and dividend in the other, are first properly arranged; then, by turning the winch, the product or quotient is found. What always appears singular and surprising to spectators, is, that in working sums in division, if the operator be inattentive to his business, and thereby attempts to turn the handle a single revolution more than he ought, he is instantly admonished of his mistake by the sudden springing up of a small ivory ball.

MORLEY, THOMAS, a disciple of Bird, bachelor of music, and one of the gentlemen of queen Elizabeth's chapel, who, though a good practical musician, acquired more celebrity by his treatise, entitled, "A plaine and easie Introduction to Practical Musick," than by his performance or compositions, though eminent for both.

If due allowance be made for the quaintness of the dialogue and style of the times, and the work be considered as the first regular treatise on music that was printed in our language, the author will merit great praise for the learning and instruction it contains. At present, indeed, its utility is very much diminished, by the disuse of many things which cost him great pains to explain; as well as by the introduction of new methods of notation, new harmonies, and new modulations, since his time, which, to render intelligible, require a more recent elementary treatise. Yet though this work is redundant in some particulars, and deficient in others, it is still curious, and justly allowed to have been excellently adapted to the wants of the age in which it was written. However, its late republication in the original form, *totidem verbis*, whatever honour it may reflect on the memory of the author, somewhat disgraces later times, which have not superseded this treatise, by producing a better and more complete book of general instructions in English, after the lapse of so many years, and the perpetual

cultivation and practice of the art, in our country, both by native musicians and foreigners.

"Analysis of Morley's Introduction."—The gamut and time-table employ the eight or nine first pages of this work. After which, moods, ligatures, points of imperfection, and alteration, augmentation, and diminution, all now obsolete, occupy fifty pages. The old and exploded proportions given under the names of figuration, tripla in the minim, quintupla, sesquialtera, induction, and sesquitercia, would now be studied *à pure perte*, as no good ear can bear, or sound judgment make use of them.

The second part likewise is wasted in frivolous dialogue and now useless matter. The definitions of concords and discords, indeed, and their use in discant, or plain counterpoint, are the subjects of conversation; but the knowledge it conveys is so inadequate to present purposes, and the student is led to it by such an indirect road, that it is to be feared he will be so bewildered in the pursuit, as to acquire but little *clear gain* for his trouble. Indeed the prohibitions are such as will lead a student of the present time into doubt and error. Page 75, he utterly condemns, as against the principles of music, the use of two fifths, though one be *false*. Indeed the use of the tritonus and false fifth is constantly avoided by old harmonists; which is excluding the use of one of the most abundant sources of beauty and passion in modern music. Whoever first combined the sharp 3d and 7th to the 5th of the key, and inverted this chord

into 4 to the second, 6 to the sharp seventh, and 4 to the fourth of a key, conferred as refreshing a benefit on the craving lovers of music, as Moses did on the thirsty Israelites, in producing water with his wand from the rock on mount Horeb. These combinations, though unknown to old masters, are utterly indispensable in the present *regle de l'octave*.

To say the truth, master Morley is not very nice or accurate in these examples of counterpoint which are given as his own, and left as models of perfection. Page 76, in the last examples, there are two faults, which would not be pardoned by modern ears or judgment: in the first of the two, bar 5, the fourth between C and G, is insipid and unmeaning; and in the second of the examples, bar 5, the modulation from the chord of D major to C, is used *sans liaison*, and, in *two parts*, without a warrantable or good effect. Few of the examples are elegant, or worthy of imitation, now; and it appears as if the attentive examination of good modern compositions, in score, would be of infinitely more service to a student, than the perusal of all the books on the subject of music that were written during the sixteenth and seventeenth centuries. Corelli, Handel, and Geminiani, for fugues; Haydn, Mozart, Boccherini, Pleyel, John Christian Bach, Abel, Giardini, Beethoven, &c. for symphonies, quartets, trios, duets, and other music for violins; Tartini and Giardini for solos; Domenico Scarlatti, Alberti, Emanuel Bach, Schobert, Eichner, Haydn, Mozart, Kotzeluch and Beethoven, Clementi, Dussek, Steibelt, Burney, Cramer, &c. for harpsichord and piano-forte pieces; Vince, Pergolesi, Haffé, Jomelli, Perez, Galuppi, Piccini, Sacchini, Pacchiello, Sarti, and Nafolini, for vocal compositions; and above all, Handel and Sebastian Bach for organ and choral music, almost all to be found in our own country, and all models of perfection in correctness of composition, knowledge of instruments, rhythm, modulation, new effects, pathos, fire, invention, and grace.

It has ever been our wish constantly to do justice to the learning



learning and contrivance of old masters, and to recommend the study and performance of their works to our readers, as curious and historical specimens of the best music of their own times; but not as the *sole* studies and models of perfection to *young professors* for all times, who with to please, prosper, and are expected to keep pace with modern improvements. To such we would *first* recommend the study of the best *modern* authors; and then, as matters of curiosity and amusement, to enquire into the productions and genius of former times, in order to extend their knowledge and views, and prevent embarrassment or surprize, whenever they happen to be called upon to perform or speak of such works.

The third part of Morley's Treatise contains more curious specimens of useful knowledge in old counterpoint, than the rest of the book. He is much obliged, however, to Tigrini, whose Compendium was published in 1588. and others, for many of his examples, whose names ought not to have been concealed. Tigrini has indeed been pillaged with such haste, that a typographical error has not been corrected; a few of these cadences have even been disingenuously disguised, and their places transposed.

Upon the whole, though the book is curious, and full of information concerning the music of the sixteenth century, it must be owned, that the language in which it is written, is at once uncouth and affected; and that neither the melody nor harmony it recommends and teaches, is of this world, at least of this age; no certain scale is given of major or minor keys; nor is the modulation he uses that of the present times. Indeed no keys are determined except F major, and D and A minor; and though so much is written concerning the moods, or measure, yet nothing is said of accent, or the preparation, use, and resolution of discords in general.

Having spoken fully of Morley as a *theorist*, we shall proceed to consider his merit as a *practical musician*. And in comparing his compositions with those of his predecessors, they do not appear so original as we at first imagined them. During the time of writing his Introduction, he must of course have consulted the productions of many authors; and he has not done it unprofitably, as a composer, any more than a theorist. It has been said, that "we often remember what we read, without recollecting that we ever *had* read it; hence it frequently happens, that what we take for invention, is only reminiscence;" which is a charitable apology for seeming plagiarism. The melodies, however, of Morley, are somewhat more flowing and polished than those of the old authors, on whose property his memory, perhaps imperceptibly, had fastened; but, besides these, it is plain that he sometimes descended to use the same materials as his contemporaries, and to interweave the favourite passages of his times into his works, of which the following is a chronological list:

Canzonets, or little short songs, of three voices	1593
Madrigals, to four voices	1594
Ballets, or <i>Fa la's</i> , to five voices	1595
Madrigals, to five voices	1595
Canzonets, or little short Airs, to five and six voices	1597

Of the following publications he was little more than the editor.

Madrigals, to five voices, collected out of the best Italian authors	1598
The Triumphs of Oriana, to five and six voices: composed by divers several authors. Newly published by Thomas Morley, Batchelor of	

Musicke, and Gentleman of hir Majesties honourable chappel - - - 1601

These madrigals, in number twenty-four, of which the music of the 13th and 24th was composed by Morley, were written, set, and published, in honour of queen Elizabeth, who is figured under the name of Oriana. The composers of the rest were Michael Este, Daniel Norcome, John Mundy bachelor of music, Ellis Gibbons, John Benet, John Hilton B. M., George Marlon B. M., Richard Carlton, John Holmes, Richard Nicholson, Thomas Tomkins, Michael Cavendish, William Cobbold, John Farmer, John Wilby, Thomas Hunt B. M., Thomas Welkes, John Milton, father of the great poet, George Kirbye, Robert Jones, John Lesley, and Edward Johnston B. M.

As Italy gave the *ton* to the rest of Europe, but particularly to England, in all the fine arts, during the reign of queen Elizabeth, it seems as if the idea of employing all the best composers in the kingdom to set the songs in the Triumphs of Oriana to music, in honour of our virgin queen, had been suggested to Morley, and his patron, the earl of Nottingham, by Padre Giovenale, afterwards bishop of Saluzzo, who employed thirty-seven of the most renowned Italian composers to set canzonetti and madrigals in honour of the Virgin Mary, published under the following title: "Tempio Armonico della beatissima Virgine nostra Signora, fabbricato per opera del Reverendo P. Giovenale, A. P. della Congregatione dell' Oratorio. Prima Parte, a tre voci. Stampata in Roma da Nicolo Mutii, 1599, in 4to."

Confort Lessons, made by divers exquisite authors, for six different instruments to play together, *viz.* the treble lute, pandora, citterne, base violl, flute, and treble violl. Dedicated to the Lord Mayor, 2d edit. - - - 1611

Master Morley, supposing, perhaps, that the harmony which was to be heard through the clattering of knives, forks, spoons, and plates, with the gingling of glasses, and clamorous conversation of a city-feast, need not be very accurate or refined, was not very nice in setting parts to these tunes, which are so far from correct, that almost any one of the city waits would, in musical cant, have *vamped* as good an accompaniment *sur le champ*, or rather *sur le chant*, which seems the original and true reading of that phrase. We remember very early in our musical life, to have heard one of the Tower waits, at Shrewsbury playhouse, *vamp a base*, upon all occasions, he being utterly unable to read any one that was written; and as our ears were not very much offended by the dissonance, we suppose that by habit, he contrived, at least, to begin and end in the right key, and was quick in pursuing accidental modulation. See what has been said of Extemporary Difeant, in Dr. Burney's Hist. of Music, vol. ii. p. 142. See also DISCANT.

A plaine and easie Introduction to Practicall Musicke, - - - 1597 and 1608

It does not appear that any of Morley's church music was printed during his life. Dr. Tudway, however, has inserted several valuable choral compositions, by him, in the collection made for lord Harley, 1715; among which are his "Funeral or Dirge Anthems, as performed at Westminster Abbey at Royal and Noble Funerals," and printed by Dr. Boyce, in the first volume of his Cathedral Services; and an Evening Verse Service, in five parts, in D minor, which has never been printed. In queen Elizabeth's music-book there are likewise five different sets of lessons, or pieces for the virginal, composed by Morley.

As so many of his pieces have been printed in score for the new edition of his Introduction, under the eye of the late



late Dr. Samuel Howard, by Randal, we shall say no more about them.

The Burial service, composed by Morley, which is supposed to be the first that was composed after the Reformation, still continues to be used in Westminster Abbey on great and solemn occasions.

We heard this service admirably performed in 1760, by the three united choirs of Westminster, St. Paul's, and the chapel-royal, at the funeral of his late majesty George II. in Westminster Abbey, where it had a most solemn effect. Nothing seems better suited to so awful an occasion than this music, in a minor key, and chiefly in simple counterpoint, but with a grave, and now *uncommon*, harmony and modulation, which added to the grandeur of the effect. The few short points of fugue and imitation introduced in this composition are such as were not common when the service was produced, nor have any of them been debased since by vulgar use. As this composition is so admirably printed by Dr. Boyce, and may be easily consulted, we shall detain the musical reader with a few remarks on it, referring to that copy, as we are unable to admit it in our plates. And we shall begin by observing, that the four first bars are remarkably solemn, and that the major third to G, after being strictly in G minor, the preceding part of the phrase, is unexpectedly grand and pleasing. The point at "And though after my skin, worms destroy this body," is admirably conducted. And, though in simple counterpoint only, the harmony and modulation to "The Lord gave, and the Lord hath taken away," convey something particularly majestic and grateful to our ears. The points at "He cometh up, and is cut down," and "Of whom may we seek for succour," diversify and give relief to the plain counterpoint in an ingenious manner; but the passage "Shut not thy merciful ears to our prayers," is extremely beautiful in the three essentials of good music: melody, harmony, and accent. Every part is *chantante*, or sings, without any seeming subserviency to the rest: and the words, which seldom happens in music of the sixteenth century, are well expressed, if we except the length given to the particle *to* in the treble and counter-tenor parts, which might easily be corrected by assigning the two first sounds to the more important word "ears," and allowing only a crotchet to the following preposition. And in this manner the words of many of our old and venerable compositions for the church might be adjusted, in order to obviate the objections that are justly made to the want of attention in their authors to accent and syllabic quantity: and this seems to be infinitely more desirable than the superseding of these admirable specimens of choral harmony, in favour of more insipid modern productions, which can boast of no other perfection than that, which, according to Pope, is in the power of every dull grammarian and critic, who "Commas and points can set exactly right." But this alone will not constitute good music, without genius, invention, melody, harmony, modulation, and variety of measures and effects. We shall only mention one point more in this venerable service, where the greatest musical art is united with the happiest verbal expression, at "Suffer us not at our last hour," and where the supplication is made in each part with great reverence and solicitude. Indeed we see but one passage which we could wish otherwise than the author has left it: and that is at "I heard a voice from heaven," where the word "from," being in the same harmony as the substantive "heaven," is insipid and unmeaning. The natural combination for that leading and unaccented part of the bar, seems to be C, with a 6th. We cannot conclude, without requesting such of our readers as understand and feel good composition, to attend to the

solemn, unusual, and pleasing effect produced in many places of this service by mere common chords: particularly at these words, "He fleeth as it were a shadow;" and by the flat 6th given to G, when the ear is habituated to expect a 5th: as at these words, "Blessed are the dead which die in the Lord."

MORLEY, GEORGE, a learned prelate of the church of England, was born at London in the year 1597. His parents died while he was very young, and left him almost destitute. He met, however, with friends, by whose interest he was elected one of the king's scholars in Westminster school, at the age of fourteen, and in 1615 he was admitted a student of Christ-church college, in the university of Oxford. He took his degree of B.A. and M.A. in 1618 and 1621. In 1628, he accepted an invitation to become domestic chaplain to Robert, earl of Carnarvon, in which situation he continued till the year 1640. Afterwards he was made chaplain to Charles I., who presented him with the canonry of Christ-church, in 1641. In the following year he took his degree of D.D.: he was a zealous adherent to the cause of the king, and gave one year's income towards the expences of the civil war. He possessed great influence among the leaders of both parties, and so highly was his integrity estimated, that he was told he should remain unmolested in the emoluments of his preferment, and not be required to subscribe any thing against his conscience, provided he would assure the ruling powers that he would not actually oppose them. He chose rather to participate in the fortunes of his suffering brethren, and was thrown into prison. Upon his liberation, finding himself deprived of all his possessions, and, what was dearer to him, of liberty of conscience, he resolved to retire to the asylum of king Charles II. in Holland. He accordingly quitted England in 1649, repaired to the Hague, and was graciously received by his prince, who kept him constantly about his person. While Dr. Morley continued abroad, he formed an acquaintance and intimacy with several foreigners, who held distinguished stations in the ranks of literature, particularly with the famous Bochart, Salmasius, Daniel Heinsius, and others. When measures were secretly preparing for the restoration of Charles II., chancellor Hyde sent Dr. Morley over about two months before it took place, with letters from the king, and himself, to the leading men in the nation, and as a proper person to assist in paving the way for that event. The chief purpose of his mission was to contradict the opinion, that the exiled prince had become a convert to popery. Upon the restoration of Charles, Dr. Morley was instantly restored to his canonry, and in a few weeks after he was promoted to the deanery of Christ-church, which was followed by his nomination to the bishopric of Worcester. He was consecrated in October 1660, and in the following year he was one of the principal managers at the famous Savoy conference. In 1662, he was translated to the see of Winchester, in which he remained till his death, in 1684, when he was in the eighty-seventh year of his age. "He was," says bishop Burnet, "in many respects a very eminent man, pious and charitable, of a very exemplary life, considerably learned, but extremely passionate and obstinate." He had been a liberal benefactor to the university of Oxford, in which he received his education; for he gave a hundred a-year to Christ-church college, and he founded in Pembroke college three scholarships for the isle of Jersey, and two for Guernsey, of ten pounds *per annum* each. Biog.

MORLING, or MORTLING, in our *Old Writers*, the wool which is taken from the skin of dead sheep, whether killed, or dying of the rot. See SHORLING.



**MORLUNDA**, in *Geography*, a town of Sweden, in the province of Smaland; 41 miles N. of Calmar.

**MORMANDO**, a town of Naples, in Calabria Citra; 16 miles N.W. of Cassano.

**MORMANT**, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Milan; 10 miles N.E. of Milan. The place contains 995, and the canton 10,058 inhabitants, on a territory of 227½ kilometres, in 29 communes.

**MORMON**, in *Zoology*. See *SIMIA Mermion*.

**MORMORA**, *LE*, in *Geography*, a town of France, in the department of the Stura, on the Maira; 14 miles S.W. of Saluzzo.

**MORMYRUS**, in *Ichthyology*, a genus of fishes of the order Branchiostegous, according to the Linnæan system, having gills without bony rays: but Dr. Shaw and some other naturalists have put it in the order Abdominales. The generic character is, head smooth; teeth numerous, notched; aperture of the gills linear, without a cover; gill-membrane with one ray; body scaly. Three species are described by Gmelin, which are as follow:

#### Species.

**CYPRINOIDES**. Tail bifid, appendaged; its habits resemble, in some measure, those of the genus Cyprinus, whence it derives its name. It has an obtuse snout; the upper jaw is longer than the lower, and it has twenty-seven rays in the dorsal fin. It is a native of the river Nile.

**ANGUILLOIDES**. This species has a sharp snout, equal jaws, twenty-six rays in the dorsal fin, and a bifid acute tail. The dorsal fin is placed opposite to the anal, and is somewhat shorter than that fin. This also is an inhabitant of the Nile.

**KANNUME**. Tail bifid, obtuse; dorsal fin with sixty-three rays. It has a whitish and very much compressed body, and is found in the Nile. The aperture of the gills is perpendicular; the snout is conic, deflected; the lower lip is the longer; belly straight, but rising from the vent; lateral line straight, in the middle of the body; tail and dorsal fin linear.

This genus has of late years been examined with much attention by M. Geoffroy, who has increased the species from three to nine. He observes, that the body is compressed, and that the structure of the tail is unusual, being of a considerable length, and of a sub-cylindric and inflated appearance, on account of its containing the glands from which the oily matter along the lateral line is secreted: he also observes that the stomach is strongly muscular; that the ovary is single, and that the swimming-bladder is almost the length of the abdomen. The new species are the following:

**OXYRHYNCHUS**. This species has a straight snout; the lower jaw is longer than the upper; and the dorsal fin runs the whole length of the back. Found in the Nile.

**SALAHIA**. In this the lower jaw is longer than the upper, and the dorsal fin is shorter than the anal, but opposite to it. It was observed by Geoffroy in the desert near Salaya, in Africa, where it had been thrown by an inundation, and left in a dry state.

**BEBÈ**. This has an obtuse snout, and the dorsal fin is six times shorter than the anal, but is placed directly opposite to it, as in the *Salahia*. It is a native of the Nile, and observed in plenty near the region of *Bebè*.

**HERSÈ**. A native of the Nile, having an obtuse snout; the upper jaw longer than the lower, and dorsal fin running the whole length of the back.

**BANÈ**. This likewise has an obtuse snout; the upper

jaw is much longer than the lower, and the dorsal fin is of equal length with the anal.

**HASSELQUISTII**. This species has twenty rays in the dorsal fin, twelve in the anal, and a forked tail. It derives its specific name from the naturalist who first observed it in the Nile.

**MORMYRUS**, a species of *sparus*. See *SPARUS Mormyrus*.

**MORNANT**, in *Geography*, a town of France, in the department of the Rhône, and chief place of a canton, in the district of Lyons; 10 miles S.S.W. of Lyons. The place contains 2500, and the canton 9770 inhabitants, on a territory of 120 kilometres, in 12 communes.

**MORNAY**, *PHILIP DE*, lord of Pleffis de Marly, in *Bio-graphy*, an illustrious French Protestant, who flourished in the sixteenth and seventeenth centuries, was born at Buhy, or Bishuy, in the French Vexin, in the year 1549. His father, James, was a descendant of an ancient and noble family, and as he was zealously attached to the Romish religion, he intended to educate his son Philip, the subject of this article, to the ecclesiastical profession. He was the rather induced to this step from the circumstance of his having a brother already high in the church, who promised to resign hereafter his benefices in favour of his nephew. These prospects were disappointed by the death of the dignitary, while Philip was only in the eighth year of his age. In the mean time his mother had become a convert to the Protestant religion, and had taken care to instil its principles into the mind of her son. His father died in 1560, after which his widow made an open and undisguised profession of her religious principles, and had the Protestant worship conducted at her mansion of Buhy. Philip studied at several of the universities at Paris and elsewhere, and made a rapid progress in the several departments of literature to which he bent his mind. Before he had completed his eighteenth year his uncle, the archbishop of Rheims, came to Paris, and having examined the young man, as to the proficiency he had made in his studies, was surprised at the depth and extent of his erudition. He was aware also of his dereliction from the religion in which he had been brought up, and endeavoured by every means in his power to reclaim him, promising to resign his bishopric in his favour at some future period, and to find him promotion in the church immediately. These offers he declined, and in 1567, upon the commencement of the troubles in France, M. du Pleffis found himself under the necessity of quitting the metropolis, and returning to Buhy. He resolved to take up arms, and to serve under his maternal uncle, but in proceeding to the army his horse fell under him, and both bones of his leg were broken. During a long confinement, the result of this accident, he composed a poem on the civil war, and some sonnets in praise of Coligni. On the peace signed in 1568, he began a tour in foreign countries, as well for the improvement of his mind, as with the view of the more perfect recovery of his crippled limb. He went to Geneva, which he was obliged to quit in a very short time, owing to the plague breaking out in the city. From Geneva he passed to Heidelberg, where he began the study of the civil law, and the German language. In the course of six months he made himself so far acquainted with the language, as to be able to read all kinds of books in it. Having quitted Heidelberg he travelled to the principal cities in Italy, and we find him proceeding to Frankfurt, Padua, and Venice. At the last named city he became acquainted with Perrot de Mezieres, who excited in him a desire of travelling into the East; but owing to the war which then existed between the Turks and Venetians for the island of Cyprus, he was



obliged to relinquish the design. In 1571, he went to Rome, where he was exposed to some danger on account of his religion. In the following year we find him in England, where he met with a most gracious reception from queen Elizabeth, whose courtiers seemed to vie with each other in the attention which they shewed him. On his return to France he paid a visit to Coligni, and while staying with him, he drew up a memorial of the observations that he had made in Flanders; and a piece intended to demonstrate the justice and advantages of declaring war against Spain; both of which were presented to the king by the admiral, who urged his majesty to improve the opportunity that offered itself by sending M. du Plessis to the prince of Orange, for the purpose of concerting a combination of the efforts of France and the United Provinces, but the king refused to attend to the advice thus offered: he had no wish to come to a misunderstanding with the Spaniards, and he was meditating, at the very moment, the destruction of the Protestants of his own country. Du Plessis foresaw the mischief before it arrived, but he could not persuade Coligni to distrust the king's sincerity. The former, from the apprehension which he entertained, took the precaution of removing his mother, while he determined to remain in Paris to brave the storm, and to assist his suffering brethren. At length the fatal eve of St. Bartholomew arrived; and he was awakened in the dead of the night by the savage butchers who were executing the orders of a still more savage monarch. Coligni fell a sacrifice among the multitudes whose lives were taken away on that tremendous night. But Du Plessis, when he found that all resistance would be in vain, escaped to England, the happy asylum of the persecuted in many periods of her history. Here he met with a cordial reception from persons of all ranks, and particularly from Mr. Secretary Walsingham. When it was known at Paris that he was safe in England, the ambassador of the elector of Saxony, and other German princes at the court of Charles IX., wrote to his friends to supply him with every thing of which he might stand in need. To console himself under the miseries of his afflicted countrymen, he betook himself to his studies; and to drive away, if possible, the wretched thoughts respecting his friends, less fortunate than himself, he wrote "Remonstrances," in which he exhorted the queen of England to undertake the protection of the suffering church. In 1574, he returned to France, and upon his arrival he attended a council of several of the Protestant chiefs, in which it was proposed that the party should immediately take arms to provide for the security of their own rights by promoting the views of the duke of Alençon. This project, though opposed by Du Plessis, was carried by a majority, and he, foreseeing the ill consequences, retired to Sedan.

While at this place he married, and wrote, at the request of his lady, "A Treatise on Life and Death," which was afterwards published at Geneva, and translated into several different languages. Previously to his marriage he had engaged in an unsuccessful contest with part of the king's troops; was wounded and taken prisoner; but after the confinement of a few days, and by assuming a false name, he was allowed to ransom himself on easy terms. In 1576, he again took arms, and now his adherents were so powerful, that the king's party deemed it expedient to propose a negotiation, which was accepted. After this Du Plessis entered into the service of the king of Navarre, afterwards Henry IV. of France, and was admitted into his most intimate councils, and by this step he was enabled to render essential service to the Protestant cause. In 1577, he was sent by his master on an embassy to the queen of England, to ex-

plain to her the justice of their cause, and solicit pecuniary assistance, which he obtained to the amount of eighty thousand crowns. During his continuance in England he was enabled to perform very acceptable services, as well for the United Provinces as for the Low Countries. He devoted his leisure moments to the diligent perusal of the Greek and Latin fathers, and composed his treatise "Concerning the Church," which was published in 1577. In the following year the prince of Orange was called by the States-general to Antwerp, and Du Plessis having taken leave of Elizabeth, went to that city to assist at the deliberations. Here his pen was employed in endeavours to check the intemperate zeal of some reformers, who disgraced their cause, and excited prejudices against it, which occasioned a rupture between the provinces by their outrages against the ecclesiastics, the churches, and other religious houses. The talents and zeal of M. du Plessis were held in such dread by his opponents, that a base attempt was made to take him off by poison, but the strength of his constitution was superior to its effects. Scarcely had he recovered from this attack, when he was called again into the active service of the king of Navarre. But in the midst of his political exertions he composed, and in 1580 published at Antwerp, a work entitled "On the Truth of the Christian Religion," in which he shewed himself a very able combatant of atheistic and other erroneous principles; and in the following year, to render his labours more generally useful, he translated it into the Latin language. In 1582, he left Antwerp for Paris, and from this time till 1593, when the king (Henry IV.) renounced the Protestant religion, Du Plessis was consulted by him on a variety of occasions, and called upon to write his edicts, manifestos, and other state papers. In 1582, his sovereign was desirous of nominating him his chancellor, but this he declined: in a few years afterwards he was appointed governor of Saumur, and upon the accession of Henry IV. he was made counsellor of state. In 1593, when the king intimated his intentions of conforming to the Catholic church, Du Plessis did all in his power to dissuade him from that measure; and when he found it impossible to save him from the disgrace which he believed must attach to his name by such a dereliction of principle, he withdrew from the court, and occupied himself in his studies, in the duties attaching to his government, and in exertions for the Protestant cause. He took an active part in all the negotiations between the king and his subjects of the reformed communion, till the celebrated edict of Nantes was obtained in 1598. He also distinguished himself by his writings in defence of religion. In 1598, he published his book on the "Eucharist," which occasioned a conference between him and Du Perron; the result of this was, that Du Plessis obtained the appellation of the Protestant pope. In 1607, he published his treatise, entitled "The Mytery of Iniquity, or the History of Papacy." About the same time he published "An Exhortation to the Jews concerning the Messiah," in which his knowledge of the Hebrew literature is advantageously displayed. He was author of other works, and from his papers have been published, "Memoirs, &c. consisting of Discourses, Instructions, Letters, Dispatches, &c." in four volumes, quarto. In 1621, he remonstrated freely with Lewis XIII. against his determination to make war upon the Protestants, but his zeal on this occasion was the means of depriving him of his government of Saumur, upon which he retired to Poitou, where he died in 1623, at the age of seventy-four, sincerely regretted by the Protestants, whose champion he had been, and esteemed by the Catholics on account of his talents and integrity, and for the private virtues which adorned his character. Moreri.

MORNAY,



**MORNAV**, in *Geography*, a town of France, in the department of the Ain, and chief place of a canton, in the district of Nantua. The place contains 405, and the canton 6590 inhabitants, on a territory of  $147\frac{1}{2}$  kilometres, in 15 communes.

**MORNE AU DIABLE**, a cape on the W. coast of Hispaniola. N. lat.  $19^{\circ} 12'$ . W. long.  $72^{\circ} 47'$ .

**MORNE Pagoua**, a cape on the E. coast of Dominica. N. lat.  $15^{\circ} 39'$ . W. long.  $61^{\circ} 19'$ .

**MORNE le Gros**, a town of the island of Hispaniola, on the N. coast; 25 miles S.E. of Porte Paix.

**MORNE Rouge**, a town of the N. coast of Hispaniola; 7 miles S.S.W. of Cape François.

**MORNING**, the beginning of the day; or the time of the sun-rising.

The astronomers reckon morning, *mane*, from the time of midnight, to that of mid-day. Thus an eclipse is said to begin at eleven o'clock in the morning, &c.

**MORNING-Star** is the planet Venus, when a little to the westward of the sun; that is, when she rises a little before him. In this situation she is called, by the Greeks, Phosphorus; by the Latins, Lucifer, &c.

**MORNING-Star**, or *Morgan-Stern*, in *Ancient Artillery*, a weapon formerly used in the defence of trenches. It was a large staff banded about with iron like the shaft of a halbert, having an iron belt at the end with cross iron spikes.

**MORNING-Twilight**. See CREPUSCULUM.

**MORNSHEIM**, in *Geography*, a town of Bavaria, in the principality of Aichstatt; 6 miles W. of Aichstatt.

**MORO**, a river of Hindoostan, which runs into the Chumbul, about ten miles N.E. of Suifopour, in the circle of Rantampour.—Also, a mountain of Piedmont; 14 miles W. of Domò d'Ofcella.

**MORO Castle**, a fortress on the Headland, on the E. side of the channel of the Havannah, in the N.W. part of the island of Cuba; it is the first of two strong castles for the defence of the channel. This fort is a kind of triangle, fortified with bastions, on which are mounted about 60 pieces of cannon, of 24-pounders. From the castle runs a wall or line mounted with 12 long brass cannon, of 36-pounders, called, by way of eminence, "the Twelve Apostles;" and at the point between the castle and the sea is a tower, where a person is stationed for giving signals of approaching vessels. See HAVANNAH.

**MOROCARPUS**, in *Botany*, so called by Ruppius, from the resemblance of its fruit to a mulberry. See BLITUM.

**MOROCCO**, or **MAROCCO**, *Empire of*, comprehends the two kingdoms of Morocco and Fez, which were formerly part of the ancient Mauritania, (which see,) and are situated on the moist western borders of Barbary, hence sometimes called *West Barbary*; it is bounded on the N. by the straits of Gibraltar and the Mediterranean; on the E. by the kingdom of Tlemcen or Tremecen, and the desert of Angad, from which it is separated by the river Mulluvia and its southern branches, and also Vled d'Elgerid, Bled-el-Jerrede, or Biledulgerid; on the S. by the Desert, or Sahara, and on the W. by the Atlantic ocean. It extends from the 28th to the 36th degree of N. lat. and from about  $2^{\circ}$  to  $11^{\circ} 30'$  of W. long.; its greatest length from the N.E. to the S.W. being about 590 miles, and its greatest breadth about 260, and about half as much where it is narrowest. The territories of Morocco are formed by the union of several small kingdoms, anciently limited to a single province, and perpetually at variance among themselves, till at length they were subdued and united under one

sovereign by the sharifs. The southern part of the empire contains the kingdoms of Suz or Sus, Tarudant, Morocco, Taflet, and Sugulmessa; and the northern, those of Fez, Mequinez, and Tremecen; the latter, which was formerly subject to Morocco, having been conquered by the Turks of Algiers, is now a part of the territories of that regency. See each respectively.

The kingdom of Morocco comprehends at present the provinces of Morocco, Escura, Ramna, Duquella, Abda, Sherma, Hea, Sus, Dra, and Gefula; that of Fez contains those of Temfena, Shavoya, Tedla, Beni-Hassen, Fez, Rif, Garet, Shaus, and Algaub or El-Garb. These provinces have been called by other names, so that the geography of the country has been confused; and besides, the limits of these provinces have frequently varied, according to the different tribes that have occupied them, and this variation of extent has occasioned a variation of name. Besides the provinces which compose the empire of Morocco, the sharifs claim sovereignty of the Vled de Nun and the desert or Sahara, but their authority over these is very precarious, being dependent on the will of their subjects and temporary circumstances. The people who inhabit these deserts, far removed from the centre of despotic authority, live in tribes or small republics, and choose their own chiefs. They nevertheless retain for the emperor of Morocco that respect and veneration which his power, and the idea they have of his supremacy, as head of the church, inspire; but they pay or refuse tribute according to their own pleasure. This part of the coast has been called Vled de Nun, from Cape Non, discovered by the Portuguese in the beginning of the 15th century, and to which they gave this name, because those who first doubled it never returned.

The whole empire of Morocco is surrounded to the E., N., and S., by a chain of vallies and mountains, which are distinguished according to the numbers and names of the tribes by which they are inhabited. From Laracha to near Saffi, the western part of it forms a sort of plain, which, in many places, is fifteen or twenty leagues in breadth, from east to west. The maritime provinces of this empire are Garet, Rif, Garb, Beni-Hassen, Temfena, Duquella, Abda, a part of the former, Hea, Sherma, and Sus. The northern provinces, E. of that of Sus and N. of Vled de Nun, are those of Dra and Gefula, near mount Atlas, the province of Morocco, of considerable extent, bounded to the N. by the province of Escura or Ascora, and by mount Atlas to the E., Escura and Ramna, Tedla, along the eastern side of mount Atlas, and having to the W. the province of Shavoya, and the province of Fez, with its numerous dependencies. (See each of these respectively.) The eastern boundary of all the western provinces of Morocco is mount Atlas. To the east of this mountain is the kingdom of Taflet, which see.

The towns in this empire are neither large, numerous, nor populous. The despots, jealous of their authority, and fearful of being deprived of the power they abuse, consider cities and strong places as more favourable to rebellions and the liberty of the subject, than camps; and therefore their towns are weakly fortified, and in a small degree capable of defence on the land side. The empire of Morocco is separated on the N. from the kingdom of Algiers, (which see,) by the river Mulluvia, which falls into the Mediterranean. The emperor possesses no place on this northern coast known by the name of Rif; those which he once had having been taken by the Spaniards, who still possess them, such are Alhufema, Melilla, and Velez de Pegnon or Gomera. Other cities and towns are Tetuan,



## MOROCCO.

Ceuta, Tangiers, Arzilla, five leagues from Tangiers, Laracha, Mamora, Sallee, Rabat, Shella, Fedala, Anafa or Dar-Beyda, Azamore, Mazagan, Valedia, Saffi, Mogodor, and Santa Cruz, beyond which there is no frequented port. The country of Tarudant, S. of this place, and a part of the province of Sus, are the southern boundary of the empire of Morocco. The principal inland cities and towns are Tarudant, Morocco, Mequinez, Fez, and Alcazar-Quiber.

The chief rivers in the empire of Morocco are the Mulluvia, Molucha or Mullooyah, the Taga, Talmuda or Tamuda, which, as well as the former, springs from mount Atlas, and discharges itself into the Mediterranean, the El Kose, or Luccos, deriving its name from its arched windings, El Kose signifying, in Arabic, an arch, the Baht, rising in the Atlas, and partly losing itself in the swamps and lakes of the province of El Garb, and partly falling into the river Seboo, Seboo or Cebu, Bu-Regreg, rising in the Atlas, and after traversing the plains of Beni-Hassen, discharging itself into the ocean between the towns of Sallee and Rabat, the Morbeya, Ommirabih or Ammirabea, which rises in the Atlas, and after separating the province of Fez from that of Tedla, and dividing the part of the empire W. of Atlas into two parts, enters the ocean at the port of Azamore, the Tenfist, a deep large river, which rises in the Atlas and discharges itself into the ocean about 16 miles S. of Saffi, Tidfi, which runs into the ocean a few miles S. of Tegrewelt, or Cape Ossem, the majestic river Sus or Sufe, which runs into the ocean, Draha, rising in the Atlas and disappearing in the absorbing sands of Sahara, the Messa, called Wed-Messa, which flows from the Atlas, drained off by the farmers during its passage for irrigating their land, &c., at low water separated from the ocean by a bar of sand; and finally the Akassa, navigable to Nun or Noon, called Wed-Noon, or Wed-Akassa. Many other streams fall into these principal rivers. The mountains of Morocco are those of the greater Atlas, surrounding the empire on the S. in form of a crescent, and separating Barbary from Biledulgerid. This then passes about 30 miles E. of the city of Morocco, is immensely high, the most elevated part being estimated at 11,980 English feet, and through the year covered with snow. It is visible at sea several leagues off the coast. The mountains that form this chain are in many places very fertile, and produce excellent fruits. In the branches E. of Morocco are mines of copper, and those which pass through the province of Sus yield besides copper, iron, lead, silver, sulphur, and saltpetre: here are also mines of gold mixed with antimony and lead-ore.

Some of these mountains consist of lime-stone, or clay, or of a mixture of both: the granite on which these masses rest must be at a considerable depth, since no vestiges of it are any where visible, not even among the fragments and loose stones with which the fields abound. The calcareous mountains are generally stocked with shells of various kinds, and other marine productions, so that no doubt can be entertained with regard to their origin. The argillaceous mountains exhibit either horizontal or vertical strata, and are not seldom dissected by veins of foliated calcareous spar. The considerable thickness of the stratum of mould by which all these mountains are covered, is a sufficient proof of the very remote antiquity of the vegetation they exhibit.

The soil consists either of pure sand, often passing into quick-sand, or of pure clay, sometimes so abundantly mixed with iron ochre, that the productions of the earth are considerably influenced by it. A great part of the province Abda, near Saffi, is on this account called *bled hamar* (the red land): all its natural productions, such as wax, gum, wool, &c. being distinguished by a reddish tint pe-

culiar to them. The wool is so much affected by it, that neither washing nor bleaching can produce a change; whence the natives of the province of Abda are known from other Moors by their *baicks*, which are constantly of a reddish colour.

The inhabitants of the upper region of Atlas live four months in the year in excavations of the mountains, *viz.* from November to February inclusive. The little Atlas extends along the Barbary coast from the straits of Gibraltar to the district of Bona in the kingdom of Algiers. See ATLAS.

The climate of Morocco is temperate and salubrious, and not so hot as its situation would lead us to suppose. It is defended by the Atlas from the east winds, that would scorch the earth; watered by the streams descending from this lofty and extensive chain, which not only diffuse verdure over the face of the country, but temper the summer heats; and refreshed from the west by the regular breezes that are wafted from the sea. In this climate the rains are regular in winter, though the atmosphere is not loaded with clouds. In January the country is covered with verdure, and enamelled with flowers. Barley is cut in March, and the wheat harvest is in June. All fruits are early in this climate; the vintage terminates in the beginning of September; and grapes are occasionally ripe at the end of May. The winters are not severe, so that ice is unknown, except on the summits of the mountains, and snow and hoary frost are uncommon phenomena, and fire is seldom necessary. The thermometer seldom sinks to more than  $2^{\circ}$  above the freezing point. The soil is exceedingly fertile, and cultivation requires little labour. Notwithstanding the salubrity of the climate and the productiveness of the soil, the swarms of locusts that infest this country commit the most dreadful ravages.

The wealth of Morocco very much consists in the fertility of its soil; its corn, fruits, flocks, flax, salt, gums, and wax, would not only supply the wants of the inhabitants, but yield an immense surplus for trade and barter with other nations, if its government were stable and secure, and if subjects were allowed to enjoy the fruits of their labour and their property in safety. The increase of corn in Morocco is often as sixty to one, and the proportion of thirty is held to be an indifferent harvest. The exportation of corn, however, is forbidden by an intolerant religion and restricting laws, which do not permit the super-abundance to be sold to infidels. The property of land is also precarious. Every thing in this despotic empire is subject to the caprice of the sovereign, and the laws of the moment.

Hence it is that in this country the present system of husbandry is exactly similar to what it was several hundred years ago; the whole of its agriculture, in particular, being confined to the cultivation of the most indispensable grains, such as wheat, barley, Turkey-millet, or aldora (*Holcus forghum*), mays, and chich-peas (*Cicer arietinum*). Most of these are sown in the months of November and December, and reaped in May or June. Their implements of agriculture are in exact correspondence with their ignorance of every thing relative to the cultivation of the soil: all that is done before sowing consists in harrowing up the earth with a most wretchedly constructed plough; but with all this mismanagement the crop will exceed twenty, nay even thirty times the quantity of seed committed to the earth. In general they make use of no manure, except that which is left on the fields by their flocks and herds. But those people who inhabit places near forests and woods, avail themselves of another method to render the soil productive. A month or two before the rains commence, the farmer sets fire to the underwood, and by this conflagration



## MOROCCO.

clears as much land as he intends to cultivate. The soil immediately after this treatment, if carefully ploughed, acquires considerable fertility, but is liable soon to become barren, unless annually assisted by proper manure. This system of burning down the woods for the sake of obtaining arable land, though not generally permitted in states differently regulated from this, is allowable in a country, the population of which bears so small a proportion to the fertility of the soil, and in which the most beautiful fields are suffered to remain unproductive for want of hands to cultivate them. In this manner the nomadic Arab proceeds in his conflagrations till the whole neighbourhood around him is exhausted; he then packs up his tents and travels in search of another fertile place, where to fix his abode, till hunger again obliges him to continue his migration. Thus it is computed, that at one and the same time, no more than a third part of the whole country is in a state of cultivation.

Extensive forests are not to be met with in Morocco; the woods consist chiefly of middle-sized trees, such as oaks, and oftener merely of shrubs, particularly of some species of *rhamnus*, rock roses (*Cistus*), phillyrea, a few species of *arbutus*, broom (*Spartium*), furze (*Genista*), pistachios (*Pistacia*), heaths (*Erica*), &c. The banks of the rivers are decorated with rosebay (*Nerium oleander*), the rough smilax (*Smilax aspera*), and the bramble (*Rubus fruticosus*). In the fields, near old walls, are found among other plants, the prickly caperbush (*Capparis spinosa*), and dwarf palm (*Chamærops humilis*). The more considerable woods, or forests, in the northern parts of the country, consist of cork-trees (*Quercus suber*), ever-green oaks (*Quercus ilex*), and on the mountains of the interior a species of spruce fir is found, the wood of which has the pleasant scent of cedar, and is used for the purpose of building, &c. The woods of the southern parts are composed of the Argan oil-tree (*Elæodendron argan*), Egyptian mimosa (*Mimosa nilotica*), a new species of arbor vitæ (*Thuia articulata*, Vahl.), purple juniper (*Juniperus phœnicea*). In the neighbourhood of Tafilet, Sus, and in the southernmost provinces, the date trees (*Phœnix dactyfera*), form continued forests, and produce plenty of fruit; but in the northern parts they are cultivated only as curiosities, and are almost constantly barren.

The inclosures of the gardens are quick hedges, made of Indian figs (*Cactus opuntia*), and the great aloe (*Agave americana*); which two vegetables are particularly well calculated for this purpose in a country where they are not affected by the winter season, and where the saving of the soil is no object to the agriculturist. The produce of the gardens consists chiefly in grapes, oranges, lemons, figs, almonds, pomegranates, walnuts, chestnuts, peaches, apricots, mulberries, and the caroba tree or St. John's bread (*Ceratonia filiqua*), being of rare occurrence. Of the smaller plants the most esteemed are water and other melons, calabashes, cucumbers, love apples (*Solanum lycopersicum*), beans, lentils, red and white leeks, radishes, artichokes, &c. *Alhenna* (*Lawsonia inermis*) is particularly cultivated in the southern provinces on account of its leaves being made use of for dyeing and for other purposes. Tobacco is cultivated chiefly at Mequinez and Fez, from whence the leaves are exported to other places of the kingdom, where they are manufactured as well into tobacco for smoking as into snuff. Hemp is cultivated in the gardens; the herb is dried, cut into small pieces, and used as tobacco, or externally as a powder, called *Hafisba*. Its operation on the body is that of opium, spirituous liquors, or other intoxicating substances; and, indeed, it is made use of by the Moors as a substitute for wine, which their religion forbids them to drink. Apples, pears, and cherries are here and there met with, but they are mostly

very indifferent, and therefore not held in esteem. The Moors, who are naturally indolent, neglect the culture of their fruits. The almost spontaneous fruits of the country are oranges, lemons, grapes, and figs. Water-melons are reared every where, and apricots, apples, and pears are occasionally found, as we have already mentioned. The olive is cultivated along the coast, particularly to the south. Gum, almonds, dates, chestnuts, wax, and salt, are the production of various provinces in this empire.

As to the ancient commerce of this country, we can find no certain or satisfactory report. It is probable, however, that the Carthaginians, who were an enlightened and industrious people, and who governed parts of Africa and established settlements on its coast, must have constituted caravans to exchange their products for the gold and other productions of interior Africa. The progress which navigation made, in the fourteenth and fifteenth centuries, must have considerably affected the commerce of Africa, and have insensibly attracted it from the centre towards the sea-coast, on the west, which approaches the equator, and where the French, Portuguese, Dutch, and English, each emulative of the other, have successively formed establishments. The great rivers of Africa, which empty themselves in those seas, united its utmost boundaries, and the ports of Europe, then received gold-dust, ivory, ambergris, Guinea pepper, and other productions, of inland Africa; the exclusive enjoyment of which had, till that time, been confined to the bordering nations, and even to them became objects of luxury. After the destruction of Carthage and Rome, the Moors, having had no intercourse of a commercial nature with Europe till towards the fourteenth century, must have confined their trade to the more central nations of Africa, with which they respectively interchanged their products. There they probably vend their merchandize of woollen-stuffs, sheep-skins, cloth, corn, salt, and dried fruits. In exchange for these they obtained gold-dust, ivory, Guinea pepper, and slaves. Such was, probably, the first source of the wealth of the empire of Morocco. The Moors on the confines of Africa might still possess nearly the same resources, if they had the same facility of communication. Those of Morocco, whose situation is more central, have, perhaps, profited the least by them during the three last centuries, either on account of the frequent revolutions which their empire has undergone, or because their despotic government has so entirely shackled trade and industry. In the sequel of this article it will appear what is the present commercial intercourse between the empire of Morocco and the nations of Europe.

The inhabitants of the empire of Morocco, known by the name of Moors, are a mixture of Arabian and African nations, formed into tribes; with the origin of which our acquaintance is very imperfect. It seems probable that most of the "Casts," which occupy the provinces of Morocco, have been repulsed from the eastern to the western Africa during the different revolutions that have agitated this part of the world; that they have followed the standards of their chiefs whose names they have preferred; and that by these they, as well as the countries which they inhabit, are distinguished. At present these tribes are called "Castles," or "Caliles," from the Arabic word "Kobella;" and they are so numerous that it is impossible to have a knowledge of them all. The different tribes that people this empire may be distributed into two principal classes, *viz.* the Brebes or Brebbers, probably the aborigines, and the Moors, most of whom are the descendants of those who were driven out of Spain. (See MORISCOES.) Both these tribes adopted the Mahometan religion on the first



## MOROCCO.

first invasion of the Arabs. For an account of the Brebes, see that article.

There is another class of persons, denominated Shellahs, who inhabit the Atlas mountains, and their various branches south of Morocco; they live generally in towns, and, like the Brebes, are mostly occupied in husbandry, though differing from them in their language, dress, and manners: they live almost entirely on (Assoua) barley-meal made into gruel, and barley washed or granulated, which they mix with cold water when travelling; this is called "Zimeta." Many of these people are reported to be descended from the Portuguese, who formerly possessed all the ports on the coast, but who, after the discovery of America, gradually withdrew thither. East of Morocco, near Dimenet, on the Atlas mountains, there is still remaining a church, having inscriptions in Latin over the entrance, supposed to have been built by them, which, being superstitiously reported to be haunted, has escaped destruction. Their language is called Amazirk.

As for the Moors, the greatest number of them are extended over the country, and the rest inhabit the cities. The former live in tents, and every year form fresh encampments, in order to give rest to the land, and to obtain fresh pasturage; but they are not allowed to remove without having first informed their governor. Like the ancient Arabs, they are wholly addicted to a rural life. Their encampments are called "Douhars," and composed of numerous tents, which form a crescent, and their flocks and herds returning from pasture occupy the centre. Each douhar has a chief, who is invested with authority for superintending and governing a number of these encampments; and many of the lesser subdivisions are again re-united under the government of a "bakhaw;" some of whom have 1000 douhars under their command. Their tents, of a conical form, and about 8 or 10 feet high in the centre, and from 20 to 25 in length, are made of twine, composed of goats' hair, camels' wool, and the leaves of the wild palm, so that they keep out water; but being black, their appearance at a distance is not agreeable. In camp the Moors live in the utmost simplicity, and present a faithful picture of the earth's inhabitants in the first ages. In the milk and wool of their flocks, they find every thing necessary for their food and clothing. It is their custom to have several wives, who are employed in all domestic affairs. Beneath their ill-secured tents they milk their cows and make butter; they sort and sift their wheat and barley, gather vegetables, grind flour with a mill composed of two round stones, 18 inches in diameter; in the upper one of which is fixed a handle by which it is made to turn upon an axle. They daily make bread, which they bake between two earthen plates, and very often on the ground heated by fire. Their common food is "Cooscoofoo;" which sec. When the officers of the camps receive strangers, they kill a sheep, which they immediately roast and serve up in a wooden platter. The women are also employed in preparing their wool, spinning, and weaving in looms hung lengthways in their tents. Thus they make their "haicks" or "hykes," which, without dressing, milling, or dyeing, are immediately applied to use. This is the constant dress of the country Moors, without either shirts or drawers, linen being deemed a luxury fit only for the court and city. The finery of which the country women are most desirous consists of large ear-rings, in the shape of a crescent, or silver rings, with bracelets and rings for the small of the leg. They also wear necklaces of small coloured glass-beads, or clove-grains strung on a silken thread. They also paint the face, neck, bosom, and almost their whole body with the forms

of flowers and ornaments; making impressions with models in which are the points of needles, that slightly raise the skin, under which a blue colour is inserted, or gunpowder pulverized, which is never effaced. The women of some Moorish tribes bear on the forehead, or on the chin, a cross, denoting probably that they are the descendants of those who were formerly subjected to the Christians of Africa, and who, to avoid paying taxes like the Moors, thus imprinted crosses upon their skins, that they might pass for Christians. The country Moors regard their wives more as slaves than as companions, and compel them to submit to every drudgery, except that of tilling the ground. The skin of the country women is tanned, as they walk unveiled; and in some places they paint their cheeks, and every where stain their hair, their feet, and their finger ends, with an herb called "Henna," (see *ALCANNA*,) which produces a deep saffron colour. In their douhars, which are scattered over the country, and commonly fixed near some rivulet or well, there is a tent for the reception of travellers, where they find poultry, milk, and eggs, and forage for their horses. Over the tents of travellers there is a guard, lest any of the Moors, who are naturally thievish, should attempt to commit a robbery. The douhar is responsible for all thefts committed in its vicinity, during the day, or in sight of its encampment. To facilitate barter there is a public market held every day, except Friday, in various quarters of each province. Here the neighbouring Moors assemble to buy or sell cattle, corn, vegetables, dried fruits, carpets, haicks, and all the productions of their country. On the outside of the market they have usually shows, buffoons, singers, dancers, and merry-andrews. On one side is the place of the barbers or surgeons, to whom they bring their sick to be cured of strains, dislocations, or other accidents. The Moors of the cities differ but little from those who live under tents; but they affect a superiority, of which they are vain. They are of the same general origin; unless we suppose, that the former are intermixed with the descendants of those Moors of Spain, who, after their expulsion, preferred a city to a rural life. Their houses have in general few conveniences: they have no windows, and they are seldom more than 16 feet high. They have all terraces on the roof, which are formed of earth and mortar; their furniture chiefly consists of mats, carpets, some chairs, a chest, a table, and a bed, which is concealed by curtains. The inhabitants of cities have only one wife; but they have female negroes, whom they may take as concubines. In their dress they are distinguished from the country Moors by wearing a shirt and linen drawers, and an upper garment of cotton in summer, and of cloth in winter, which they call a "Caftan." Obligated as they are to conceal their riches, the Moors wear no jewels; very few of them have so much as a ring, a watch, or a silver snuff-box. The Moorish women of the cities seldom leave the house, and they are always veiled. They are not, however, in general very reserved: those of the south are the handsomest, and they are so reserved, or so guarded, that their relations do not enter their houses, nor their tents. Nevertheless there are tribes, who hold it to be an act of hospitality to present a woman to a traveller. The females of the cities are more addicted to finery than those of the country. The Moors present their wives with jewels of gold, silver or pearl, but very few wear precious stones. They have rings both of silver and gold, also ear-rings, in form of crescents, bracelets of silver and gold, and silver rings at the lower parts of their legs. Although the use of white paint is unknown among the Moorish women, and that of red seldom recurred to, it is not uncommon for them



## MOROCCO.

them to dye their eyebrows and eyelashes, and to trace on their feet, the palms of their hands, and the tips of their fingers, regular figures with benna.

Among the Moors and Jews, who people the empire of Morocco, there is an intermediate class of persons, called renegadoes, who have renounced Christianity to embrace Mahometism. Many of these were originally Jews: the Moors do not hold them in the least respect, and the Jews are still less honoured. These apostates only intermarry among each other. The Jews are very populous in the empire of Morocco. Proscribed in Spain and Portugal, they have sought an asylum in this empire. They possess neither lands nor gardens, nor can they enjoy their fruits in tranquillity. They must wear only black, and are obliged, when they pass near mosques, or through streets in which there are sanctuaries, to walk barefoot. Notwithstanding their oppression, and the contempt with which they are treated, they have many advantages over the Moors: better understanding the nature of trade, they act as agents and brokers, and profit by their own skill and cunning, and the ignorance of the Moors. Some are mechanics, such as goldsmiths, tailors, gunsmiths, millers, and masons; they are also employed by the emperor in receiving the customs, coining the money, and in intercourse with European merchants, and in all negotiations with the various European governments. The wives of the Jews in Morocco are in general well-formed, handsome, with good complexions, and very fine eyes, addicted to dress, and somewhat inclined to gallantry. As the Jews throughout the empire live separate from the Moors, they enjoy their religious rites with considerable liberty. See ALGIERS and BARBARY.

The Moors, as we have already said, are a pastoral people, and their wealth consists in their flocks and herds. The wool of their sheep is partly employed in their own clothing and carpets, and partly sold to foreign nations. The wool is of various sorts; some kinds being very coarse and others very fine, and particularly that of Tedla. In the empire of Morocco there are few black sheep. Oxen of a small breed are plentiful; for home consumption the Moors salt their beef and preserve it from year to year; their raw hides are sent in prodigious quantities to Marfeilles. The camel is an animal of great value and use to the Moors; as it is used for the purposes of agriculture, as well as for travelling; and its flesh also serves for food. The horses of Morocco are in general good, and they are taught to endure fatigue, heat, cold, hunger, and thirst. They are formed for fleetness and activity, but the breed is decreased, except in Abda, and about Morocco. Mules are much used, and the breed is encouraged. Poultry is abundant in Morocco; pigeons are excellent; partridges are plentiful; woodcocks are scarce; but snipes are numerous in the season; the ostrich is hunted both for sport and for profit, as its feathers are a considerable article of traffic: hares are good; but rabbits are confined to the northern part of the empire from Laracha to Tetuan. Fallow deer, the roebuck, the antelope, foxes, and other animals of Europe, are not very abundant in Morocco; lions and tigers are not uncommon in some parts of the empire: of all the species of ferocious animals found in this empire, the wild boar is the most common: the sow has several litters in the year, and her young, which are numerous, serve as food for the lion. The same varieties of fish, that are found in the Mediterranean, are taken on the shore of West Barbary.

The religion of the Moors is Mahometism, which they very rigidly observe. They follow the sect of Abdallah Melek, or Melu, who was one of the four commentators on the Koran. Saints and their sanctuaries are very nume-

rous among the Moors; and they are devoutly invoked by the men for the cure of their diseases, for the fertility of their lands, and for success in their undertakings; and by the women for the blessing of children. Some of them pretend to have charms against wizards, forcerers, the poison of serpents, and other venomous insects. They even eat scorpions. The number of saints contributes very much to the increase of superstition among the Moors, of which their despotic governors are not at a loss to avail themselves. The Moors of the country never fail, after harvest, to perform a visit of pilgrimage to the saint, whom they highly venerate, carrying their first fruits as an expression of homage and gratitude. Their priests, their judges, all the learned in the law, every well informed person, together with their sharifs or nobles, are held by the Moors to be holy; and they extend their veneration even to Christian priests. Madmen, idiots, and dotards are supposed by these people to be possessed by a divine spirit. The sanctuaries of the saints are very numerous, and there are some to which large possessions are annexed. The propensity of the Moors to superstition, enthusiasm, and fanaticism, inspires them with a veneration for such of their number as have made the pilgrimage to Mecca. Even a camel, that has been at Mecca, is well fed, maintained without work, and allowed to graze freely wherever he shall stray.

The two Mahometan festivals, called Bairam and Corban, are each of them kept by the Moors for eight days; and they also observe the anniversary of Mahomet in the same manner; and they celebrate the festival of the new year for ten days after its commencement.

No government can be imagined more absolute than that of Morocco. The subject throughout the empire has nothing which he can call his own, not even his opinions or his existence: his master deprives him of his property or of his life whenever he pleases. The services that are performed to the sovereign are gratuitous, and merely honorary; and the favours, which he may think proper to bestow at his own pleasure, are the only revenue of those who perform them. Wherever the monarch happens to be, he grants public audiences four times a week for the distribution of justice; and this the Moors call holding the "Meshhoar." While he performs these functions, he sits on horseback, with an umbrella held over his head by one of his grooms; and this, in Morocco, is the sole distinctive mark of royalty. Although all may have access to these public audiences, no one is admitted without a present proportioned to his wealth or station, or the importance of the matters depending, and the circumstances under which he is obliged to treat. The governors of provinces give money, slaves, horses, and camels; private persons present haicks, carpets, cloths, or other effects; a poor man will offer an old camel, two sheep, a goat, nay even three hens, or a dozen of eggs. The governors or bashaws exclusively regulate the police of their districts; and they take care to increase the revenue by their authority, or by availing themselves of the alterations which the spirit of inquietude raises among the Moors. When the bashaws have acquired wealth, the emperor strips them of it, and this kind of retributive justice conduces to the benefit of his treasury. Money, in this government, constitutes the crime, or obtains the pardon of the accused.

In the empire of Morocco there is no code of laws; but the practice of jurisprudence is reduced to the application of certain principles deduced from the Koran, and its commentators. All litigations concerning property, succession, and the several claims of interest, are brought before the cadi of each town, or district of a province; and after pleadings,



## MOROCCO.

pleadings, he, afflicted by some other men of the law, gives sentence according to the majority of opinions. If the parties are dissatisfied, they may appeal to the emperor; but this is a case which seldom happens. The Moors, when they quarrel, insult and abuse each other, but seldom strike.

As to the state of knowledge among the Moors, much cannot be said in commendation of it. Deriving their language and religion from the Arabs, they seem not in any degree to have participated of their knowledge. The Moors of this empire, though the Moors of Spain blended with those of Morocco may be found among their progenitors, have preserved no traces of the genius of their ancestors. The Moors have no conception of the speculative sciences: those among them who can read, and their number is very small, seldom read any thing but their books of religion. Education consists merely in learning to read and write; and as the revenues of the learned are derived from those talents, the priests and talbas among them are the sole depositories of this scanty knowledge. The Moors, like the Arabs, adopt the practice of rhyming and singing the history of any extraordinary event. The Moors of Spain paid particular attention to the study of physic and astronomy, and they have left valuable monuments of their skill and attainments; but the modern Moors are much degenerated: they have no inclination to the study of science, and they are shamefully ignorant both of diseases and their remedies. Their most common physicians are their talbas, their fakirs, and their fairs, in whom they repose a superstitious confidence. Astronomy is almost unknown to the Moors: although they lead a kind of wandering life, under the canopy of the heavens, always open to their view, they have little acquaintance with celestial bodies; and they are totally unable to calculate eclipses, which they always interpret to portend evil. However, magic, the companion of astrology, has here its followers, and it is particularly studied by the talbas in the southern parts, who successfully use it in imposing upon Moorish credulity with strange dreams, and ambiguous forebodings and predictions. The language of the empire of Morocco is Arabian; but it exists among them in a very corrupted state.

In the character and manners of the Moors we discern the deplorable effects of despotism on the one hand, and slavery on the other. Despotism so debases the soul, that it is susceptible neither of fortitude nor of elevation: the slaves only learn the will of their masters, and have not even an idea of liberty. With less sensibility than other men, they are faithful neither to their relations, nor friends, nor country; their vices are the opposite of all good faith; they love not one another, and foreigners they love still less. Easily supplied, and inhabiting a naturally fertile country, the Moors are little addicted to labour; and hence it is that they have little vigour, and little of that characteristic energy which gives birth to noble ideas, and to great crimes or great virtues. This slumber of the faculties keeps them in eternal stupidity, and is the very prop of despotism; for it seems to be a well-founded remark, that governments are more or less arbitrary, in proportion as the people are more or less informed. The Moors are enervated in body as well as in mind: though they are tolerably well-formed, have regular features, good teeth, and fine eyes, yet their countenances are destitute of expression or mind. Their whole aspect bears the stamp of slavery and oppression. Avaricious by nature, these people are addicted to accumulate and to conceal wealth. This propensity of the Moors renders them pliant, cunning, and dissembling; and generally inclined, especially among the lower orders, to theft and rapine.

Although truth and candour would not warrant our saying that there are no individuals, whose actions are just or generous; yet it behoves those who deal with them to beware, for they will ever discover something of the Moor. Let any one read the account of Mungo Park's travels, and their indignation will be excited by the treatment which he experienced from the Moors.

The Moors, like other Mahometans, use, in the computation of their time, the lunar months and year; but in some of their astronomical calculations, and for the purpose of regulating the hour of prayer according to the seasons, they have recourse to the solar year, adhering to the old stile. They count the days of the week by first, second, third, &c. from Sunday to Saturday, which mode of reckoning they seem to have received from the Hebrews.

The Moors marry young, the age of puberty of the females being 13. They are permitted to have four wives, and as many concubines as they can maintain. In some parts the husband receives no portion with his wife, but pays for her; but it is most common for the parents to give a portion with the bride. If she be repudiated, the husband restores it two-fold: if the husband die, the wife recovers her portion, and the eighth part of his effects. The children of the wives have all equal claim to the effects of the parents; those of the concubines can only claim half as much. As women are not admitted into the society of men, young persons do not marry here from love, but for convenience; and the relations form the contract, and settle the terms of it. The purity of the bride at the time of marriage is much regarded, and proofs of it are required and publicly exhibited. Among the Moors it is customary to marry their male and female negroes, and after a certain period to restore them to freedom; but after they recover their liberty, they live by labour.

At the close of harvest, it is the custom of the Moors to lay up their corn in matamores, that is, in pits where it is long preserved. (See MATAMORE.) They also deposit their riches, as well as their corn, in the ground. They have some other customs, which we shall summarily recite; such as their repugnance to the killing of storks, which they deem sinful: they hold it contrary to the spirit of religion, and betraying irreverence, to bury the dead in mosques, thus profaning the temple of the Most High by the putrefaction of dead bodies. The deceased is not kept in the house, unless he expires after sun-set, but his body is transported to the mosque. The Moors sing at their burial service, an usage which they have probably adopted from the Christians of Spain, as the Mahometans do not sing. On Friday women repair to the sepulchres of the dead, to weep and pray at the resting-places of those whose memory they hold dear. The Moors have a custom of making bon-fires at the feast of St. John, but can give no reason for it; however, the origin of this custom is of very ancient date. The people of this country have a particular aversion to bells, originating probably from their aversion to Christians.

The military establishment of the empire of Morocco is the result of a succession of accidental circumstances. Some few years ago 50,000 negroes were kept in pay in Morocco; but with views of economy, the emperor disarmed and disbanded them; and now the total amount does not exceed more than between 15 and 18,000 men, who are kept in constant pay; and even some of those are sent into distant provinces, to protect the tax-gatherers. Nevertheless, most of the Moors are soldiers; as each of them keeps a horse, a sabre, and a musket, and they are ready to march at the first warrant of the monarch. Although the population of this empire bears but a small proportion to its extent, the emperor



## MOROCCO.

emperor might with great ease raise from 2 to 300,000 men, if such a force were found to be necessary. The emperor has few infantry in his service, the chief force of his army consisting of cavalry. The Moors are good horsemen, and capable of being good soldiers, though not actually formed for this purpose. Armies among the Moors are usually drawn up in a crescent, the strength of which is in the centre, and here the artillery is placed; and their whole art of attack consists in acting with the detachments of the two extremities, so as to surround the enemy, put him between two fires, and at the same time expose him to be cannonaded by the artillery. The emperor has of late procured more than 60 mortars of various dimensions, and above 200 pieces of artillery; and he has exercised some persons in the art of gunnery. The muskets are forged in the empire of Morocco of iron procured from Biscay; they are about 6½ feet long, and are so much loaded with iron as to fatigue the soldier. Their sabres are also manufactured in Morocco of Biscay iron. Gunpowder is likewise made in this empire.

It is probable that, after the expulsion of the Moors from Spain (see MORISCOES), and those revolutions which internally distracted the empire of Morocco, all naval exertions were long renounced. The coasts of Barbary, washed by the Mediterranean and the Western ocean, only gave harbour to some pirates; and the progress of these, it is presumed, would not be very great, when the Portuguese had conquered Ceuta, Arzilla, and Tangiers. Navigation began to be encouraged under the reign of Muley Ishmael. When these towns had been abandoned, and commerce became more generally promoted throughout Europe, Salée became a port of some consequence, and the Salée rovers were formidable to the merchants of Europe. When Sidi Mahomet, a late emperor, had made peace with the principal nations of Europe, he collected all his vessels into a squadron, that he might maintain his marine force, and add to its respectability. Although the naval strength of the emperor of Morocco is not very considerable, the situation of his states will always afford him an advantage: he possesses Tangiers and Tetuan at the different mouths of the strait, through which vessels from all parts of the globe, sailing for the Mediterranean, must pass; and his row-galleys, in so narrow a passage, are always capable of calculating their distance and ascertaining a safe retreat.

The revenues of the emperor of Morocco cannot be easily estimated, as they entirely depend on his will. In the present exhausted state of the empire, the various taxes united are scarcely sufficient for its own support: and the treasury of the emperor, which was formerly very considerable, was reduced in 1782 to about two millions of ducats, or about five hundred thousand pounds sterling. Such is the state of an empire which nature has enriched with her gifts, and which, after having been laid desolate by the conflicting passions of man, is at present scarcely sufficient to supply his wants.

Various and contradictory statements have been made by travellers of the population of this country. A late writer has collected from the best sources of information to which he could have access a variety of particulars, from which we deduce the following general results. The total population of the principal towns, which he enumerates, is stated at 895,600: that of the provinces and states, also specified, is given at 10,341,000: and the total is as follows: the tribes of the Brebers of North Atlas altogether amount to 3,000,000; the district of Tafilet contains 650,000; the provinces of the Morocco empire, west of Atlas, include 10,341,000; and the inland cities, towns, and ports contain 895,600; so

VOL. XXIV.

that the total population of the whole empire, including Tafilet, amounts to 14,886,600 persons.

If we except some trifling barter, the safety of the sea has been the principal cause why the nations of Europe have made treaties with the emperor of Morocco. England is the first power which concluded treaties of friendship and commerce with the emperors of this country. Possessing Tangiers, ceded to her by Portugal in 1662, an intercourse subsisted between England and Morocco; but it was often interrupted by the caprices of Muley Ishmael. At the commencement of the last century a treaty of peace was renewed under George I. After the death of Muley Ishmael this treaty was confirmed, and renewed in 1728 by Muley Aclmet Daiby, and a little time after by Muley Abdallah. The English have long maintained a trade on the coast of this empire, where they sell coarse cloths, ferges, lineins, pewter, lead, mercer's commodities, and the iron which their ships bring from Biscay. In return they receive sometimes oils, gums, wax, elephants' teeth, and have often sent, in French bottoms, to Marfeilles oils, raw hides, and wool. Before the American war, that separated America from England, they also exported a number of mules to North America; but the dismemberment of that part of their dominions has greatly diminished their trade with Morocco, which was not very considerable.

In 1732 an ambassador was sent by Muley Abdallah into Holland, and the republic then made its peace with that emperor; but subsequent revolutions gave little stability to that treaty. Holland was the first power that renewed treaties of peace with Sidi Mahomet; but this emperor afterwards, *viz.* toward the end of 1774, declared war against the Dutch. However, Holland renewed the peace in 1778. Holland afterwards carried on some trade with the coast of Morocco, and custom has almost rendered her importations necessary. She there vends quantities of Silesian linens, called platillas, many of the coarse linens of the Baltic, and others, some few spices, drugs, tea, timber, iron of Biscay, and quantities of the cutlery and mercery wares of Germany. Holland has been used to receive from the coast of Morocco, in return, sometimes oils, wax, gums, and elephants' teeth; but as these returns, which suit the Dutch merchants, are insufficient to balance the quantity of merchandize they send thither, they have almost continually profited by the facility with which they can run for the French ports, to send oils to Marfeilles, wools, and raw hides, which there find a more ready sale than in the north. The court of Denmark began to negotiate with Sidi Mahomet in 1755. But interruptions occurred, and the Danes could obtain the continuation of peace merely by paying annually the sum of 25,000 piastres. Denmark has not itself any trade with that coast. The Swedes concluded peace with the emperor of Morocco in 1763, on condition of paying a certain tribute; but in 1771 Gustavus III. objected to this tribute; and it was at length agreed, that the king of Sweden should send an ambassador and a present once in two years to the emperor of Morocco. The Swedes have no commercial intercourse with this empire. The republic of Venice made peace with the emperor of Morocco in 1765, on condition of paying an annual tribute of upwards of four hundred thousand pounds, but after some temporary discord, peace was established in 1781. That republic has no commercial intercourse with Morocco, and therefore, like the courts of Denmark and Sweden, pays this tribute solely for the safety of navigation. The court of Spain, as well as that of France, made peace with the emperor of Morocco in 1767. But a rupture occurred between Spain and the emperor; and the court of Madrid, deferring to con-

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clude a treaty, was satisfied with remaining in a kind of truce. Sidi Mahomet renewed peace with Spain in 1780. Between Portugal and Morocco there is no continued trade; and the intercourse of the two courts is simply confined to testimonies of friendship: the republic of Genoa only enjoys a kind of truce with the empire of Morocco, wholly unsupported by any treaty. In 1777 the emperor of Morocco, being at peace with the principal commercial nations, granted, by public letters, entire liberty to all ships to trade with, and enter, his ports, professing himself desirous of maintaining peace with the whole world. But this declaration produced little effect, and was soon counteracted by his conduct. The United States of North America, after securing their independence, wishing to profit, during the year 1786, by the pacific disposition which the emperor of Morocco announced to all commercial nations, concluded a treaty of peace with this monarch. The French have been accustomed to vend, on the coast of Morocco, much of the linen of Brittany, and of other places, some raw silks for the manufactures of Fez, unspun cotton, Biscay iron, common papers, mercery goods, some few silks, cloths, sugar, and coffee, and as much sulphur as the emperor requires: and they have received, in exchange, wool, oils, raw hides, gums, and elephants' teeth.

The duties, coins, weights, and measures in Morocco are almost as variable as the opinion of the emperor. The duties both of exportation and importation have been very various, and are entirely arbitrary. The coins, which are current over the coast of Morocco, are those of the emperor, and those of Spain. The coins of the emperor are those of gold, silver, and copper, which have no fixed value. The gold ducat, which is very scarce, and which has little circulation, is worth 15 ounces, corresponding to eight and fourpence English. The silver money is the current ducat, the ounce, and the blanquil. The current ducat is worth 10 ounces, the ounce four blanquils, and the blanquil 24 fus. The fus is the only current copper coin. The value of the blanquil is nearly seven farthings English; so that the ounce is worth five shillings and sixpence three farthings. The Spanish piastre is current in trade, but though in general its value is fixed, it may vary according to the convenience of the emperor, and his interest in rendering piastres scarce or common. The weights by which they buy and sell in Morocco are equivalent to the weights of Paris, or to the poids de marc or pound of 16 ounces; the subdivisions of which are in both places the same. Merchandise is generally sold by the quintal of 100 pounds; but some commodities are sold by the great quintal, or 150 pounds. Corn is measured along the coast of Morocco in different ways. In the southern provinces, known by the name of the kingdom of Morocco, wheat is sold by the garara and the mood. The garara contains 40 mood, and the mood weighs from 18 to 20 pounds; so that the garara must be nearly 800 weight. In the kingdom of Fez, from Sallee to the north, corn is sold by the sassa, the fahah, and the mood. Four mood make one fahah, and 60 mood one sassa; and hence the weight of the sassa must be 12 quintals. The corn measures, however, are liable to variation according to the will of the emperor. The measure by which cloths, linen, and woollen are sold is called coode, which is the cubit of the ancients. The coode contains 19 inches four lines: and as the French ell is 44 inches,  $2\frac{1}{4}$  coodes are nearly equal to an ell.

*Morocco, History of.* This country, having continued about four centuries under the Roman yoke, from the invasion of Julius Cæsar to the declension of the empire, fell immediately under the Goths, who crossed over from Spain, and made an easy conquest of its provinces. This new

government lasted till about the year 600, when the Saracens, a nation no less furious than the Vandals, tyrannized over them in their turn, till they were driven out by the Arabians, who, besides their natural ferocity, were actuated by a fiery zeal to propagate Mahometism, every where by force of arms, and overrun this whole country, obliging the inhabitants to submit to their religion as well as government. For some time the administration of the country was exercised by the lieutenants of the caliphs; but their seat of government being distant, having been successively removed from Medina to Damascus, from Damascus to Cufa, and from Cufa to Bagdad, insensibly enfeebled their authority. The Arab generals in Africa, availing themselves of these circumstances, in favour of their ambitious projects, excited commotions towards the end of the eighth century, and aspired themselves at sovereignty. The descendants of Mahomet, called to the throne by the veneration in which they were held by the vulgar, raised new factions; and the first of these were the Edrissites, who took their name from Edris, son of Abdallah, descendant of Ali, husband to the daughter of Mahomet. From Herbelot we learn, that their dynasty was exterminated by the Fatimites, who pretended that they were the descendants of Ali and Fatima, the daughter of Mahomet; this latter dynasty, the founder of which took the name of Mohadi, director of the faithful, had some success in Egypt; but its duration in Mauritania, which was exposed to numerous revolutions, was only momentary. This part of Africa was afterwards governed by four principal dynasties, the Morabethoon, the Moahedins, the Benimerins, and the Sharifs of two different branches.

Edris, having escaped the massacre of all the kinsmen of Ali at Medina, fled in 768 into Mauritania, in order to avoid the persecuting sword. Here he conducted himself with so much prudence, that he gained the affection of the people, so that they were desirous of living under his government and embracing his religion. His exemplary conduct and diligent instruction scattered the seeds of Mohammedism in this country, where the great aptitude of this religion to the manners of the Moors facilitated its progress. Edris, taking advantage of his ascendancy over the minds of men, sent troops into Spain to succour the Mahometans, and this zeal for the propagation of his religion contributed yet more to increase the affection of the Moors. His son was acknowledged as sovereign after his death, and in 793 he founded the city of Fez; which was the capital of the first monarchy established in Africa after Mahomet. This Edris much interested himself in favour of the Arab Moors in Spain. From Marmol we learn, that the house of Edris, and the house of Mequineci, reigned in Mauritania in 914, and that reinforcements were sent over from this country into Spain in 920 and 925. During the progress of the 10th century, disturbances occurred; and El-Mohadi, said to be a descendant of Ali and Fatima, declaimed against the house of Edris on the ground of heresy, and having made himself master of several cities, deposed the sons of Edris from their governments, before the succours which they had intreated from the king of Cordova arrived. El-Mohadi declared himself caliph, and marched towards mount Atlas to extend his domains. In process of time this usurper was assassinated, and with him terminated the dynasty of the Fatimites. This was succeeded by that of Morabethoon, so surnamed from the strict observance of religion by the tribe of which he was chief. The armies of this chief were constantly victorious, and after various battles, he remained sovereign of Mauritania. In 1086 he was succeeded by his son Joseph, whose subjects proclaimed him king. He is said to have finished the city of Marakesch, or Morocco,



which had been begun by his father, and there established his seat of empire. This prince vanquished the king of Fez, and seized on his kingdom, which was thus, for the first time, united to that of Morocco. The reputation acquired by Joseph Ben-Tessifin was so great, that in 1097 the Mahometan kings of Spain sought his alliance, and offered him the supreme sovereignty, thus hoping to establish and extend their empire. Accordingly he passed over into Andalusia, and joining his forces to those of the Mahometans in Spain, conquered the city of Seville and its environs. Upon his return to Africa, he proclaimed the "Gazia," or war of religion. Attended by a large force, he again passed over into Spain, and in 1102 he was master of all Andalusia, Granada, and Murcia. Joseph died at Morocco in 1110, and was succeeded by his son Ali, who built the grand mosque at Morocco, continued to succour the Mahometans of Spain, commanded respect by his military exploits between the years 1112 and 1115, and had for his successor his son Brahem, with whom terminated the dynasty of the Morabites or of Morabethoon. The first king of the race of the Moahedins, called by the Spaniards Almohades, was Abdulmomen, or, as Herbelot calls him, Mohamet Abdulmomen Ben-Tomrut, who was chosen king of Morocco in 1148. This king strangled the son of Brahem, who had been acknowledged king, and who was the last of the house of Tessifin, the founders of the city, as well as the empire of Morocco. Although Abdulmomen destroyed Morocco on his accession to the throne, he afterwards rebuilt it; but at the same time issued a savage order, that all the Morabethoon, who were found throughout his empire, should be put to death. The eastern provinces of Africa, however, shook off the yoke of the kings of Morocco, and elected for themselves independent chiefs; but Abdulmomen remained master of all Mauritania, and preserved the two kingdoms of Fez and Morocco, which had been united under Joseph Tessifin. He was also able in 1149, and again in 1151, to succour the Mahometans of Spain. This prince died in 1155, and was succeeded by his son Joseph, who prosecuted the measures in Spain, which his father had projected. In 1184, he was killed in Spain by a fall from his horse, and after several divisions among the Moors, his son Abu-Jacob, surnamed Almanfor, the invincible, was proclaimed emperor. The conduct, courage, and activity of Jacob soon established his supremacy over the African coasts as far as Tunis, and also preserved that which had been acquired over the Arab Moors of Spain. Almanfor, having reduced his subjects to subordination, published the "Gazia," or war against infidels, similar to the crusades of the Christians, and marched into Spain with a large army. After a series of successful exploits till the year 1197, he returned into Africa to quell some commotions that had occurred during his absence. Almanfor, having violated his promise, by putting to death a Marabaut, whom he had promised to pardon, on account of services rendered to him during his siege and capture of Morocco, is said to have disappeared and wandered through the world, or most probably performed the pilgrimage to Mecca, as a private person, in expiation of his crime. During his absence, his son, Mahomet Ben-Nasser, called also Nasser-Al-Melek Ben-Mansoor, was proclaimed king, and took possession of his father's throne in 1210. This prince went over to Spain, in order to extend his conquests, but in July 1212, the Moors, in an engagement with Alphonso, suffered a total rout, so that Mahomet-Ben-Nasser returned to Africa in disgrace, and soon after died, leaving his empire to Said Barrax, one of his grandsons. After the death of Said, who was assassinated by a traitor, the principal persons of the Moahedins elected his uncle, Abdel

Cader, in his room; but this prince, not able to secure the confidence of the people, was obliged to surrender his power to Abdallah, one of the race of the Benimerins, who was the first of that dynasty, that possessed himself of the sovereign authority. Abdallah was succeeded by his son, and his death made way for the accession of his uncle Ben-Joseph; who wholly deprived the Moahedins of their power. The kingdom of Morocco, by this change of its monarchs, lost the sovereignty of Spain; but Ben-Joseph, unoccupied with foreign conquests or government, established more firmly his authority in Mauritania. In 1275, however, he passed over into Spain, and having committed various ravages in the kingdom of Andalusia, returned into Africa. After the death of Ben-Joseph, he was succeeded by his son Abu-Said, who, like his father, made several expeditions into Spain, all of which were unsuccessful. His reign was tranquil until the year 1303, when his son occupied the throne, which was vacated by his death; and he was succeeded in 1318 by Joseph-Ben-Jacob. After the death of this monarch, Abul-Hassen, his son, took possession of the throne, and by various military operations in Spain, involved himself in expences, which, joined to his ill success, produced murmurs among his subjects, of which one of his sons, named Abdalharaman, availing himself, drew over several tribes to his support. Abu-Hennon, another of his sons, instigated a rebellion against him, and ultimately succeeding, took possession of the kingdom in 1354, and remained in quiet possession of it till his death in 1409, when he was succeeded by his son, Abu-Said, a prince addicted to pleasure and debauchery; in consequence of which, several internal commotions made way for the succession of his son Abdallah, in the year 1423. Abdallah reigned with justice for several years, but at length he was slain by an inhabitant of Fez, who was a sharif, and who was proclaimed as sovereign instead of Abdallah, with whom terminated the family of the Benimerins. This sharif was overpowered by Muley-Shaik, who was the first of the kings of the race called Merini, the descendants of a branch of the Benimerins. The family of the Merini were unable to maintain their authority, and the kingdoms of Fez and Morocco continued in a state of anarchy till the beginning of the 16th century. At this time, a Moor, of the province of Dara, whose name was Mahomet-Ben-Achmet, calling himself a sharif and descendant of the prophet, availed himself of the opportunity that presented itself for accomplishing his projects of ambition. With this view he sent his three sons, in 1508, in pilgrimage to Mecca, who, on their return, were highly honoured by the Moors. Having thus established their reputation, their father prosecuted his scheme of ambition. At length Achmet, the eldest of his three sons, aided by the principal men of Morocco, was proclaimed king. In process of time, the power and the ambition of the sharifs advanced together; and two of the brothers divided their conquests; the eldest, Muley Achmet, retained Morocco, and Muley Mohamet took up his residence at Tarudant, by which they could mutually succour each other against the Portuguese and their allies, who were masters of the greatest part of the western coast, from the cape of Aguer to the province of Duquella inclusive. After a variety of successive contentions between these two brothers, Muley Mohamet, having seized on the kingdom of Fez, sent Muley Achmet into the desert, with a part of his family, that he might have nothing to fear from his ambition. The former, however, was assassinated in 1556, and the latter was murdered in prison: and thus both these sharifs, who had perfidiously made religion and good faith a pretext to depose their masters and benefactors of sovereignty,



## MOROCCO.

reignty, fell themselves, as did also most of their posterity, by the hands of murderers, and thus received the just recompence of their crimes. Muley Abdallah, the son of Muley Mohamet, was, in 1557, joyfully received at Morocco, whither he repaired as soon as he heard of the death of his father; and having assembled the chiefs of the army and the principal men of the city, he was proclaimed king of Fez, Morocco, and other towns and provinces, under the dominion of the sharif. Upon the death of Abdallah in 1574, he was succeeded by his eldest son Muley Mohamet, surnamed the negroe; and when he prematurely died, Muley Achmet, uncle of Muley Mohamet, was proclaimed king of Fez; and he obliged his brothers to swear fidelity to his son Muley Shek, and to insure to him the succession. Muley Achmet was loved and respected by his subjects: he was the last descendant of the sharifs, and died in 1603, much regretted. After his death, Muley Sidan, the youngest of his sons, was proclaimed his successor; and notwithstanding the various competitions of his brothers, he remained sovereign of the empire. At length, in 1630, he died at Morocco, leaving princes, as his successors, who were little qualified to govern. Muley Abdelmeleek, eldest son of Muley Sidan, succeeded his father, and was the first king of Morocco, who, beholding several small kingdoms united under his government, assumed the title of emperor. His conduct excited public discontent, and in 1635 he was assassinated. Upon his death, his brother Muley El-Valid ascended the throne; and his reign was distinguished by condescension and affability, so that he gained the cordial esteem of his subjects. His death took place in 1647, and Muley Achmet Shek, the last of the sons of Muley Sidan, was elected emperor. The indolence and effeminacy in which this monarch lived, and the oppressions of the governors of provinces and cities, excited murmurs among the people, and at length universal discontent. The mountaineers, having besieged and taken Morocco, put Muley Achmet to death, and proclaimed one of their chiefs, named Crom-El-Hadgy, who reigned some years, but without the love of his people. This prince inhumanly massacred all the descendants of the sharifs, who might disturb his reign; and by his cruelty, revenged the blood and the rights of the house of Merini, whose monarchs these same sharifs had destroyed, after having stripped them of wealth and sovereignty. Crom-El-Hadgy, after having reigned about seven years, closed life tragically, and was succeeded by his son Muley Shek, who was dethroned by a new revolution, which placed the present reigning family on the throne. The Moors of Tafilet, who, on account of a dearth in the province, made a pilgrimage to Mecca, brought back a sharif, named Muley Ali, a descendant of Mahomet, born at the town of Yambo, near Medina, who was treated with great respect, and was at length advanced to the throne. This dynasty acquired the name of Fileli, derived from Tafilet, of which Muley Sharif was sovereign. He is said to have had 84 sons, and a greater number of daughters. However that be, the first and the two last, *viz.* Muley Mohamet, Muley Arshid, and Muley Ishmael-Semein, reigned in succession. The first died in 1664, and was succeeded by Muley Arshid, who terminated his life in 1672, and left behind him a character marked by a succession of cruelties, which the ferocity of his nature rendered habitual, and led him to practise for his amusement. His successor, Muley Ishmael, possessed the same qualities, and still greater vices than his brother. Wholly regardless of the lives of men, the emperor made it his pastime to assassinate them with his own hand. The days set apart for prayer were generally dedicated by him to these massacres, and he seems to have estimated the value of his

devotion by the number of his murders. After a reign of 54 years, continually agitated by inquietude, suspicion, and revolt, and fulfilling his sceptre by the most tragical acts, Muley Ishmael died in 1727, at the age of 81 years. His successor was his son Muley Achmet Daiby, who was proclaimed emperor by the grandees and the negroes, and who became brutal by insolence and intemperance, so that he was despised and hated by his subjects. He died of an incurable dropy in 1729, and was succeeded by Muley Abdallah, who was no less capricious and cruel than his father Muley Ishmael. He was six times deposed, and as often regained the throne. Death constrained him to vacate the throne in 1757, after having divided the empire with his son Sidi Mahomet, who having accustomed the people to respect his authority, succeeded to the throne without opposition. This prince manifested a laudable desire of making peace with the powers of Europe; and accordingly, after confirming that already made between Morocco, England, and Holland, he began his reign with concluding treaties with Denmark and Sweden, and in the following year with Venice, France, Spain, and Portugal. In 1782 the emperor and the grand duke of Tuscany made peace, and the other powers of Italy enjoyed a kind of truce with the empire of Morocco. For the encouragement of commerce, he built the town of Mogodor, where nature had formed a port accessible at all seasons. He ordered the fortresses of Laracha and Rabat to be repaired, embellished each of these cities with some edifices and public markets, and made additions to his own palace at Morocco. He multiplied mercantile establishments on the coast of Morocco; and merchants settled at Santa Cruz, Mogodor, Saffi, Rabat, Laracha, and Tetuan. Desirous of effacing the remembrance of all the caprices of his father, he wholly employed himself in the restoration of order, of re-establishing rules for government, and uniformity in the decisions of justice; and with a view of carrying all his laudable plans into full effect, he raised his relation, Muley Dris, to the rank of his associate in the empire; but after the death of this prince in 1772, Sidi Mahomet indulged his own propensities more freely, to the dishonour of his government, as well as to the detriment of his country. Sidi Mahomet, who, after a reign of 33 years, died in 1790, was succeeded by one of his sons, Muley Yezid. The present emperor is Muley Solyman. Chenier's Morocco. Jackson's Account of the Empire of Morocco, &c. 1809. Lempriere's Tour, &c. 1791. Mod. Un. Hist. vol. xiv.

MOROCCO, the metropolis of the empire of Morocco, was formerly the capital of the kingdom of the same name, bounded by the river Omarbaym, or Morbeya: distant 20 leagues from the sea, E.S.E. of Saffi, and not far from mount Atlas, and built nearly on the spot where the ancients placed "Bocanum Hemerum." Abu Tefsin, first king of the Moors, of the race of the Morabethoon, or Maraboots, first fixed his residence at the city of Agenil, on the western declivity of mount Atlas, at a little distance from Morocco. But wishing to found a capital for his dominions in a more eligible situation, he chose the spot where Morocco now stands, which is called by the Arabs Marrakesch, and by the Spaniards Marraccos. This city was begun by that prince in the year 1052, and continued by his son and successor Joseph Ben Abu Tefsin, who kept his court here. In the time of his grandson, Ali Ben Yusif, it is said to have contained a million of inhabitants, but in later times, it has been much depopulated, and by reason of the devastations of succeeding conquerors, retains little of its ancient magnificence except its general form; and its decay is very perceptibly indicated by the accumulated ruins



## MOROCCO.

of houses and gardens within the town, which were once the seats of habitations. Its walls are extremely thick, and formed of a cement, composed of lime and sand, which is put in caſes, and beaten with rammers. This mortar, which is called by the Moors and the Spaniards "tapia," hardens in time, and turns to ſtone, eſpecially when the compoſition is well made, and when it contains a ſufficient quantity of lime. The extent of the walls, which, with few exceptions are entire, leads one to conceive of a city that might contain 300,000 ſouls; though it now appears little better than a deſert. The quarters, which have been rebuilt, are at a conſiderable diſtance from one another; and the houſes are low, dirty, and extremely inconvenient. Chenier doubts whether it contains 30,000 inhabitants, even when the court is there. Other writers reduce the number to 20,000. Mr. Jackſon, profeſſing to derive his ſtatement from authentic information, extracted from the imperial register, ſwells the amount of inhabitants in the city of Morocco to the prodigious number of 270,000. He ſays, that the breaches in the walls were repaired previously to the ſiege and capture of the city by Muley Yezid, in 1792; and that ſome of the houſes are built with much elegance and taſte, but as they are placed behind high walls, they are not viſible from the ſtreets.

Morocco is ſituated in a pleaſant plain, planted with palm-trees, and mount Atlas to the eaſt, which has a fine and romantic effect: and this plain is rendered capable of the higheſt cultivation by the numerous ſtreams that traaverse it. It was formerly divided into a large number of encloded gardens, and beautiful plantations of olive-trees, which have, in part, eſcaped the barbarous deſtroyations of contending factions. It is ſaid that this plain was beautified and enriched by waters iſſuing from more than 600 ſprings in mount Atlas, and that it abounded with country-houſes and pleaſure-grounds; but theſe were ruined by the revolutions which preceded and diſtinguiſhed the reign of Muley Iſhmael; and it was, with difficulty, that, in 1768, the courſe of 1200 ſtreams, which wind through this fertile country, was renewed. The city is ſupplied with water partly from theſe ſprings, and partly from the river Tenſift, which flows near the city, but principally from a ſubterraneous brick aqueduct, that goes round the town, 20 feet below the ſurface, and from which, at about every 100 yards, pipes of brick-work branch off, and convey the water into the different houſes.

Morocco poſſeſſes ſeveral large moſques, without much pretenſion to magnificence. Within the walls are large encloded ſpaces, containing gardens of orange-trees, and pavilions, covered with coloured tiles, and exhibiting a ſtriking contraſt to the wretched buildings that ſurround them; in theſe pavilions the princes lodge. The body of one of the moſques is ſupported by many marble pillars, and under it is a ciſtern, capable of holding a large quantity of water, which is collected in the rainy ſeaſon, and uſed by the Mahometans in their numerous ablutions. The town is ſquare, and reſembles thoſe of Sallee and Seville; it conſiſts of ſeven ſtories, and is aſcended by a gradually winding terrace, composed of lime and ſmall ſtones, ſo firmly cemented as to be almoſt as hard as iron. On the ſummit is a turret, in form of a ſquare lantern, which commands a moſt extenſive proſpect, and from which Cape Cantin, diſtant about 120 miles, is diſtinctly viſible. Another tower is rendered famous by the three golden balls on its top, which together weigh ten quintals, or 1205lbs. avoirdupois. A tradition prevails that ſeveral fruitleſs attempts have been made for taking them down, and that thoſe who were concerned in the buſineſs were ſoon after killed. Among the public edifices in this city, we may mention the Elcaſſaria, or Kaſſaria,

which is an oblong building, ſurrounded with ſmall ſhops, filled with ſilks, cloths, linens, and other valuable articles for ſale. This is a place of reſort for converſation, as well as for trade, ſomewhat reſembling our Exchanges in Europe. At the extremity of the city, and near the palace, is the quarter of the Jews, encloded by walls nearly two miles round, where the Jews reſide under the guard of an alcaid, to preſerve them from inſult. Not leſs than 3000 Jewiſh families formerly reſided here; of which there now ſcarcely remain 200, (Mr. Jackſon ſays 2000,) ſubject to tyranny, and debaſed by poverty; oppreſſion having obliged the reſt to ſeek refuge among the mountains. At the extremity of the city, and fronting mount Atlas, is the emperor's palace, which is a very extenſive and ſolid building. The principal gates are Gothic arches of hewn ſtone, embellished with ornaments in the Arabian taſte. Within the walls are various courts and gardens, elegantly laid out. In each of theſe is a pavilion, to which the emperor retires to take his reſt, or amuſe himſelf with his courtiers. Theſe pavilions are ſquare pyramidal edifices, about 40 feet in length, and ſomewhat leſs in height, covered with varniſhed tiles of various colours; and the interior is a kind of ſpacious hall, admitting light and air. The inside of the halls is painted and gilt in the Arabeſque faſhion, and ornamented with cartouches, containing paſſages of the Koran, or other Arabic ſentences. The furniture is very ſimple. The pavilion, containing apartments for the emperor and his women, is in one of theſe gardens. This building is very ſpacious, but furniſhed without any ſplendid ornaments. The emperor, Sidi Mahomet, who was particularly attached to this city, has cauſed to be built by Europeans, regular pavilions, on a piece of ground which he has added to his palace. Theſe are finiſhed in an excellent taſte, and give an air of grandeur and magnificence to this part of the palace. Between theſe pavilions and the old palace is a large vacant ſpace, encloded with walls, called "Meſhooar," where the emperor gives public audience four times in a week. Mount Atlas, E. of the city, defends its environs from the E. wind, which in ſummer would be ſcorching, while the ſnows on its ſummit ſerve to moderate the heat of the climate. The nights are conſtantly cool, and the principal heat is felt from nine in the morning to four or five in the afternoon. In winter, the ſnow which falls on the mountains produces a ſenſible cold: nevertheless, the climate is very healthy. The houſes, however, are inconvenient habitations for foreigners, as they are full of bugs; and in ſummer, ſcorpions, ſerpents, and gnats are very troubleſome. The city of Morocco, beſides its trade with the various diſtricts of the interior country, receives the moſt conſiderable ſupplies of European merchandize from the port of Mogedor, which is diſtant about four days' journey, according to the rate of caravan travelling; a caravan journey being 24 miles. Some of the more valuable articles, however, are tranſported from Fez to the Morocco market, ſuch as muſlins, cambrics, ſpices, tea, pearls, coral, &c., and the elegant Fez manufactures of ſilk and gold. There is held at Morocco a conſiderable market every Thursday; at which all articles of foreign as well as home manufacture are bought and ſold; and alſo horſes, horned cattle, ſlaves, &c. Samples of all kinds of merchandize are carried up and down the market and ſtreets of the city by the delals, or itinerant auctioneers, who proclaim the price offered, and when no one offers more, the beſt bidder is apprized of his purchaſe, the money is paid, and the tranſaction terminates. The ſhops of Morocco are ſupplied with merchandize of various kinds by the merchants of Mogodor, who receive, in return for European goods, the various articles of the produce of Barbary for



for the European markets. A considerable difference, however, has lately taken place in the mode of transacting business at Morocco: for the present emperor's father respected European merchants, and their book-debts were seldom disputed, and commerce was much encouraged: but Muley Solyman's political principles differ so widely from those of his father, that the most trifling transaction should now be confirmed by law, in order to enable the European to be on equal terms with the Moor, and to entitle him to recover any property or credit given: these measures have their various impediments in the way of commerce, which have very much restricted and diminished it. N. lat.  $30^{\circ} 57'$ . W. long.  $7^{\circ}$ .

MOROCCO, or *Marroquin*, the skin of a goat, or some other animal resembling it, dressed in sumach or galls, and coloured of any colour at pleasure; much used in book-binding, &c.

The name is ordinarily derived from the kingdom of Morocco, whence it is supposed the manner of preparing these skins was first borrowed.

We have Morocco skins brought from the Levant, Barbary, Spain, Flanders, and France; red, black, yellow, blue, &c. The various manners of preparing morocco, both black and in colour, are so curious, and so little known among us, that the public will not be displeased to find them here.

MOROCCO, *Manner of preparing black.* The skins having been dried in the hair, are steeped in clear water three days and nights; then they are stretched on a wooden horse or leg, like that used by tanners; then beaten with a large knife for the purpose, and steeped afresh in water, changed daily till they be well come again. In this state they are thrown into a large vat in the ground, full of water, wherein quick-lime has been slaked, where they lie fifteen days: whence, however, they are taken, and again returned every night and morning; they are thrown into a fresh vat of lime and water, and shifted night and morning, as before, for fifteen days longer; then rinsed in clear water: and the hair is then taken off, on the leg, with the knife; the skins are then returned into a third vat and shifted, as before, for about eighteen days; then steeped twelve hours in a river; then taken out, rinsed, put in pails, where they are pounded with wooden pestles, changing the water twice; then laid on the horse, and the flesh taken off, returned into pails of new water, taken out, and the hair-side scraped; then returned into fresh pails; taken out, and thrown into a pail of a particular form, having holes at bottom; here they are beaten the space of an hour, and fresh water poured on from time to time; stretched on the leg, and scraped on either side; returned into pails of fresh water; taken out, stretched and sewed up all around, in manner of bags, leaving out the hind legs, which serve to make an aperture for the conveyance of a mixture mentioned hereafter.

The skins, thus sewed, are put into lukewarm water, where dogs' excrement has been dissolved. Here they are stirred with long poles half an hour, left at rest a dozen, taken out, rinsed in fresh water, and filled by a tunnel with a preparation of water and sumach, mixed and heated over the fire till ready to boil; and as they are filled, the hind legs are sewed up to stop the passage. In this state they are let down into the vessel of water and sumach, and kept stirring four hours successively; they are then taken out, and heaped on one another; after a little time, their sides are changed; and thus they continue an hour and a half, till drained. This done, they are loosened, and filled a second time with the same preparation, sewed up again, and kept stirred two hours, piled up, and drained as before. This

is again repeated a third time, with this difference, that they are now only stirred a quarter of an hour; after which, they are left till the morrow morning, when they are taken out, drained on a rack, unsewed, the sumach taken out, folded in two from head to tail, the hair-side outwards, laid over each other on the leg, to perfect their draining, stretched out, and dried; then trampled under foot by two and two, stretched on a wooden table, what flesh and sumach remains scraped off, and the hair-side rubbed over with oil, and that again with water.

Having thus received their oil and water, they are wrung in the hands, then stretched and pressed tight on the table with an iron instrument like that of the curriers, the flesh-side uppermost; then turned, and the hair-side rubbed strongly over with a handful of rushes, to squeeze out as much of the oil remaining within as possible. The first course of black is now laid on the hair-side, by means of a lock of hair twisted and steeped in a kind of black dye, prepared of four beer, in which pieces of old rusty iron have been thrown. When half dry, by hanging in the air, they are stretched on a table and rubbed over every way with a paumelle, or wooden-toothed instrument, to raise the grain, over which is passed a light couche of water, then sleeked by rubbing them with rushes prepared for that purpose. Thus sleeked, they have a second couche of black; they are then dried, laid on the table, rubbed over with a paumelle of cork, to raise the grain again; and, after a light couche of water, sleeked over anew; and, to raise the grain a third time, a paumelle of wood is used.

After the hair-side has thus received all its preparations, the flesh-side is pared with a sharp knife for the purpose, and the hair-side rubbed strongly over with a woollen cap, having first given it a lustre with barberries, citron, or orange. The whole is finished by raising the grain lightly, for the last time, with the paumelle of cork, which leaves them in a condition for sale and use.

MOROCCO, *Manner of preparing red.* The skins are steeped twenty-four hours in a river, taken out, stretched on the leg, beaten with the knife, returned into the water for twenty-four hours, re-beaten on the leg, re-steeped; thrown into a vat, and for three weeks taken out, and turned every morning, to dispose them to peel. Being taken out for the last time, they are scraped with the knife, and when the hair is quite off, thrown into pails of fresh water, where they are rinsed; then the flesh-side scraped, thrown into pails, and thus alternately from the leg to the pails, till they leave the water quite clean; then they are put in luke-warm water, with the sumach as before; and, after twelve hours, they are rinsed in clear water, and scraped on the leg on both sides, pounded in pails, and the water changed three times; then wrung and stretched on the leg, and passed after each other into water, with alum dissolved in it. Thus alumed, they are left to drain till the morning, then wrung out, pulled on the leg, and folded from head to tail, the flesh inwards.

In this state they receive their first dye, by passing them one after another into a red liquor, prepared with lacca, and some other ingredients, kept secret among the *maroqueiners*. This they repeat again and again, till the skins have got their first colour. They are then rinsed in clear water, stretched on the leg, and left to drain twelve hours; then thrown into water, into which white galls pulverized have been passed through a sieve, and stirred incessantly for a whole day with long poles, taken out, hung on a bar across the water all night, white against red, and red against white; and in the morning the water is stirred up, and the skins are returned



returned into it for twenty-four hours. For other approved processes, see *TURKEY Leather*.

MOROCCO, *Red, in Gardening*. See ADONIS.

MOROCHI, in *Geography*, a town of Mexico, in New Biscay; 75 miles E.S.E. of Parral.

MOROCHTHI, an unscientific name given to dendritæ of a white colour; as also to the spongy variety of carbonate of lime, called lac lunæ.

MOROCHTHUS, in the *History of Fossils*, a name of an indurated clay, commonly known among us by the name French chalk, or marking-stone; and its principal use with us is the taking of spots out of clothes, and the serving tailors to mark with, as it makes a much more determinate and a neater line than chalk. The ancients, however, had it much in esteem in medicine, and used it as an astringent, and in colics and hæmorrhages, and externally in disorders of the eyes.

It is distinguished from all other earths, by being the hardest of all, considerably heavy, semi-transparent, of a very smooth, unctuous, glossy surface, and of a greyish-white colour, with a considerable admixture of green; it is of a disagreeable brackish taste, and does not ferment with acids; it does not colour the hands; nor adhere to the tongue, nor melt in the mouth, and it is not diffusible in water. It burns to a great hardness, and a white colour. It is dug in Germany, the island of Sardinia, and many other places; but no where so plentifully as about Briançon in France, whence it is there commonly called *Briançon chalk*.

MOROCTES, one of the names by which Pliny, and some other of the older authors, called the *morochthus*, or French chalk.

MOROKINNEC, or MOROTINNEC, in *Geography*, one of the smaller Sandwich islands, uninhabited, situated between the S.W. coast of Mowee and the island of Tahoorowa. N. lat. 20° 39'. W. long 156° 29' 30".

MORON, a town of France, in the department of the Morbihan; 9 miles N.N.E. of Ploermel.—Also, a town of Spain, in the province of Seville; 23 miles E.S.E. of Seville.

MORONA, a river of South America, which rises about 20 miles S.E. of Riobamba and runs into the Maragaon, 40 miles E. of St. Francisco de Borja.

MORONE, JOHN, in *Biography*, a cardinal and statesman, born at Milan in 1509, was son of Jerome Morone, grand chancellor of Milan, an eminent political character. John was educated partly at Modena, after which, it is supposed, he studied at the university of Padua. At the age of twenty he was nominated by Clement VII. to the bishopric of Modena, but he did not enter upon the charge till the year 1533; even before this so much confidence was placed in his early talents and discretion, that he was sent by the pope into France to induce the king to consent to a peace. In 1536 pope Paul III. appointed him nuncio in ordinary to Ferdinand king of the Romans; he was present at the diets held at Hagenau and Spire, and it was owing to him that the approaching general council was held at Trent. In 1542 he was made a cardinal, and fixed upon as president of the council, though then only thirty-three years of age. In 1544 he was appointed to the legation of Bologna, of which he was deprived in 1548 from the suspicions of the French, who thought him too much devoted to the interests of the emperor. It was, perhaps, for a similar reason, that on the assembling of the council of Trent he was excluded from the presidentship to which he had been elected. In 1553 he was sent by Julius III. as legate to the diet of Augsburg, where he vigilantly and warmly defended the interests of the

holy see. About this time he exchanged the bishopric of Modena for that of Novara. The cardinal, though zealously attached to the church of Rome, was an enemy to persecution, and on that account fell under the suspicion of the bigot cardinal Caraffa, afterwards pope Paul IV., who caused Morone to be arrested and confined in the castle of St. Angelo. In 1558 he was brought to trial upon the charge of teaching and having taught many opinions connected with the reformed faith. He made his innocence so apparent, that the pope offered to liberate him from prison, which he refused, unless he would grant him, at the same time, a solemn declaration that he believed him innocent. The pope hesitated, and died without coming to a determination, and Morone was admitted to the conclave which elected Pius IV. The examination of his cause was then resumed, and he obtained a complete absolution not only from crime, but even from all suspicion in matters of faith. As a recompence for so serious an injury, he was appointed to succeed cardinal Gonzaga as president of the council of Trent, and by his address he brought its business to a conclusion in 1563. After this he obtained many sees appropriated to the cardinals, as those of Palestrina, Frefcati, Porto, and Ostia. During the troubles of Genoa in 1575, he was sent thither as legate by Gregory XIII., and contributed very much to the re-establishment of tranquillity. He died at Rome in 1580, leaving behind him a very high character for integrity, and activity in the various services which he undertook. Some Latin and Italian letters; an oration before the council of Trent, and another before the emperor Ferdinand; synodical constitutions for Modena, and a code of laws for the government of Genoa, are proofs that his public occupation did not entirely prevent him from exercising his pen to useful purposes.

MORONOBIA, in *Botany*, Aubl. Guian. 788. t. 313. Juss. 257. Lamarck Illustr. t. 644. See SYMPHONIA.

MOROSINI, ANDREW, in *Biography*, a senator of Venice, was descended from James Morosini, of a very illustrious family, and was born in 1558. He received an excellent education, and rose through the different degrees of nobility to the rank of "savio grande," and to a place in the council of ten. He was three times one of the reformers of the university of Padua, had obtained much wisdom by experience in public affairs, and was accomplished in every branch of polite literature. In 1598 he succeeded to the office of historian of the republic. He was employed in this task till his death, which happened in 1618, and he had not then put the last hand to it. This history was written in Latin, and is a continuation of that of Peter Bembo. It comprehends the period between 1531 and 1615. It was first published in 1623, and reprinted in 1719 at Venice, in the collection of Venetian historians. It has been ranked among the best performances of that age. He also published, in Latin, a volume of "Opuscula and Epistoles;" and a narrative in Italian of "Expeditions to the Holy Land, and the Acquisition of Constantinople by the Venetian Republic."

MOROSINI, PAUL, brother to the preceding, and likewise a Venetian senator, was appointed to the same post of public historian, after Nicholas Contrarini. He gave an entire history of the republic from its origin to the year 1487, in the Italian language. It was published in 1637. It is said to be valuable for several notices omitted by other writers who preceded him.

MOROTOI, in *Geography*, one of the Sandwich islands, 2½ leagues W.N.W. from Mowee. The S.W. coast is very low, but the land rises backward to a considerable height, and appeared to be entirely without wood. Its produce consists



confists chiefly of yams. On the S. and W. sides the coast forms several bays, that promise good shelter from the trade winds. N. lat.  $21^{\circ} 10'$ . W. long.  $157^{\circ} 17'$ .

MOROTOUNA, a town of Hindoostan; 24 miles E. of Tellicherry.

MOROZZO, a town of France, in the department of the Stura; 9 miles E. of Coni.

MORPETH, a market and borough town in the western division of a ward of the same name, and county of Northumberland, England, is seated on the northern and southern banks of the Wonsbeck river, in the course of the great road from London to Edinburgh. It is a place of remote antiquity, and a borough by prescription, under the government of two bailiffs and seven burgesses. Two members have been sent from this town to parliament since the year 1553, who are elected by the bailiffs and free burgesses, and returned by the former. The number of voters is estimated at about 200, the greater part of whom are under the influence of the earl of Carlisle, and William Ord, esq. who possess the chief part of the burgage tenures. The constitution of this borough is rather singular: among the burgesses there are a few persons of independent principles; but their number is too small to produce any material effect at elections.

Camden informs us that this town was "burned down by its inhabitants in 1215, out of hatred to king John," but the Chronicle of Melrose assigns a more probable cause for the event, by asserting that the barons destroyed it, as they did many other towns, with the view of distressing that monarch, when on his march to punish their revolt. It was again visited with similar destruction in 1689, at which time the damage was estimated at 3500*l*. The present appearance of Morpeth is that of a small, neat town, situated between the woody banks of the Wonsbeck. Here are a county gaol for Northumberland, and an ugly town-house, built at the expense of the earl of Carlisle in 1714, from a design by Vanbrugh. The market day is on Wednesday, when there is usually a considerable show of fat cattle and sheep for the consumption of Newcastle, Shields, and Sunderland. The parish church stands about a quarter of a mile from the town, on Kirk-hill; and there is, besides, a chapel at the bridge end. Adjoining to this last, in an old chantry, is a free school, which was founded by king Edward VI. Here was formerly also an hospital for the sick; and at about the same distance as the church, west of the town, appears the whole of a small door-way, which anciently led into the New Minster abbey, founded in 1139 by Ranulphus de Merlay, who placed in it monks of the Cistercian order. The abbots of this monastery were frequently summoned to parliament during the reign of Edward I.

Of Morpeth castle, which was seated on a considerable eminence close to the town, few vestiges remain, except a portion of the gateway tower, and some fragments of the outer walls. This fortress owed its erection to William lord Greystock in the year 1358, and is said to have been of some extent and consequence as a baronial mansion. In the time of Leland, who says "Morpeth castle standeth by Morpeth town," it was the property of lord Dacres, as husband of Elizabeth baroness Greystock; and continued in his family till the reign of queen Elizabeth, when a daughter of Thomas lord Dacres conveyed it to lord William Howard of Naworth, ancestor to the present earl of Carlisle, whose landed property nearly encircles the whole town. The north end of Morpeth, called Bullers-green, formerly belonged to New Minster abbey. It was purchased by Thomas Wharton in 1677, and is now the property of Mrs. H. Burdon, his lineal descendant.

According to the parliamentary returns of 1801, this town contains 427 houses, and its inhabitants are estimated at 2951 in number, viz. 1342 males, and 1609 females, of whom 689 are engaged in some branch of trade or manufacture, and 116 in agriculture.

About two miles and a half south-west from Morpeth stands the village of Mitford, which was formerly a market town. The barony here was originally the property of a family which gave its name to the village, and after changing masters several times, and in different ways, has, by an unusual accident of fortune, returned to a collateral branch of its ancient owners, the Mitfords of Molefden. The castle of this barony stood on a lofty, natural eminence on the south bank of the Wonsbeck. When it was originally built is uncertain, but it is mentioned in history as having been destroyed by king John and his Rutars (a band of Flemish troops), when they laid waste this part of the country in 1215. It was rapidly however rebuilt, for in the following year, we find it besieged by Alexander, king of the Scots. Leland says, "it was beten downe by the kynge, for one sir Gilbert Middleton robbery'd a cardinall cominge out of Scotland, and fled to his castle at Mitford." The ruins of this fabric, now remaining, are the keep-tower and the exterior walls, which have a deep ditch on the south and east sides, cut out of the solid rock. Near the castle stands the present manor-house, the seat of Bertram Mitford, esq.; and also the parish church. On a hill, immediately above the village, is St. Leonard's hospital, founded by sir William Bertram in the reign of Henry I., and now converted into a family residence called "The Spital," the residence of Bullock, esq. Above three miles east of Morpeth, on the banks of the Wonsbeck, are some remains of Bothal castle, built by sir Robert Bertram in the time of Edward III. According to a survey of it, taken in 1576, the circumference of the walls was 490 feet. These were flanked, on the north, by two polygonal towers, fifty-three feet high, and on the south-west angle by a square turret, whose height measured sixty feet. In the church, which adjoins the castle, may be seen a curious tomb of one of the barons and his lady. It is made of alabaster, and exhibits the recumbent figures of the deceased, with a variety of emblematical figures and armorial devices. Four miles and a half south-east of Morpeth is Hartford, the seat of William Burdon, esq. author of "Materials for Thinking," &c. The house, a plain substantial building of yellow stone, consists of a centre and two wings; and was completed in the year 1803, on the site of an old mansion. Near its principal front is the channel of the river Blyth, which meanders through a romantic and picturesque valley. The open country abounds with coal pits, and the soil is mostly a strong clay. The general aspect is dreary and unpleasant.

To the north of Morpeth are several other seats and ruins not unworthy of notice. Cockle-park tower, called in Speed's map Cockley tower, is a curious remnant of antiquity, in the fashion of the old border mansions. Weddington castle was formerly a most distinguished edifice, though the work of different ages; but was pulled down about 30 years ago, with the exception of an octangular embattled tower, to which a square modern building has been since added. Felton-hall, north-west of Weddington, is distinguished as the place where the barons of Northumberland assembled in the reign of king John, and did homage to Alexander, king of Scotland. A few miles down the river Coquet, on which this mansion stands, is Guyzance, once remarkable for a nunnery built by Richard Tyfon; and at Brinkburn was a priory founded by Roger Bertram, baron of Mitford, in the reign of Henry I.

This



This building stands on the north brink of the river above-mentioned, finely sheltered by lofty banks and hanging woods. The shell of the church still remains entire. Its architecture is in the plain, pointed style, but the north and south doors are charged with very rich Saxon ornaments. Beauties of England and Wales, vol. xii. by the Rev. Mr. Hodgson. A Tour in Scotland by Thomas Pennant, 5th edition, 1790, 3 vols. 4to. Gough's Camden, 3 vols. folio. History of the Boroughs of Great Britain, &c., 1792, 3 vols. 8vo. Historical and Descriptive View of the County of Northumberland, 2 vols. 8vo. 1811. The latter work contains a comprehensive account of the county.

MORPHASMUS, *μορφασμος*, among the *Ancients*, a kind of dance, in which, by a great many figures, they imitated the transformations of Proteus.

MORPHEUS, in *Mythology*, one of the dreams which were reckoned the children of Sleep, but which derives its name from *μορφη*, *form*, or *shape*, because this dream, or symbolically Morpheus, excelled the others, viz. Phobetor and Phantasia, in assuming the gait, mien, air, and tone of voice of those whom he was to represent.

MORPHEW, *ΜΟΡΦΕΥΑ*, in *Medicine*, a term which has been used, especially by the translators of the writings of the Arabians, and their followers, to denote the slighter species of scaly leprosy, which was denominated *alpbos* by the Greeks, and *albobak* by the Arabians; and which is included by Celsus under the head of *Vitiligo*. See *LEPROSY of the Greeks*, and *LEUCE*, where the characteristics of these diseases are detailed at length.

MORPHO, in *Geography*, a town of the island of Cyprus, the residence of an aga and a cadî; 33 miles W. of Nicosia.

MORRA, a town of Naples, in Abruzzo Ultra; 32 miles N.E. of Aquila.—Also, a town of Hindoostan, in Bahar; 8 miles N. of Arrah.

MORRA, *La*, a town of France, in the department of the Tarnaro; 3 miles E. of Cherasco.

MORRHÄ, in *Natural History*, a name given by some to the substance more properly called *murra* or *myrrha*, of which the cups called *murrhina* and *myrrhina* were made.

MORRHINA VASA, in the *Writings of the Ancients*. See *MURRHINA*.

MORRICE-DANCE. See *MORESK*.

MORRIS, LEWIS, in *Biography*, a Welsh antiquary and poet, was born in the isle of Anglesey in 1702, and died in 1765 at Penhryn, in Cardiganshire. He surveyed the coast of Wales in 1737, by order of the admiralty-board, and his work was published in 1748. Some of his poetical pieces in the Welsh language have been printed, and he left above 80 volumes of manuscripts of antiquity, now deposited in the Welsh charity-school, Grays-Inn lane, London. Owen's Camb. Biog.

MORRIS, RICHARD, brother of the above, was also a poet and critic in his native language. He was clerk in the navy pay-office, and superintended the printing of two valuable editions of the Welsh Bible. He died in 1779. William Morris, another brother, was a great collector of Welsh manuscripts, and died comptroller of the customs at Holyhead in 1764. Owen's Camb. Biog.

MORRIS, in *Geography*, a county of America, on the northern line of New Jersey, west of Bergen county. It is about 25 miles long, and 20 broad, is divided into five townships, and contains about 156,809 acres of improved, and 30,429 acres of unimproved land. The eastern part of the

VOL. XXIV.

county is level, and affords fine meadows, and good soil for Indian corn. The western part is more mountainous, but produces crops of wheat. Here are seven rich iron mines, and two springs famous for curing rheumatic and chronic disorders. Black lead, &c. has been found in the mountains. The number of inhabitants in the county is 17,750, of whom 775 are slaves.

MORRIS Bay, a bay on the west coast of the island of Antigua.

MORRIS Pike, or *Moorish Pike*, in ancient *Artillery*, a kind of pike that was much in fashion about the reigns of Henry VIII. and queen Elizabeth. These pikes were used both by land and sea; and though their characteristic peculiarities are not precisely ascertained, many of the motions, used in the exercise of them, resembled those practised with the common pike.

MORRISTOWN, in *Geography*, a town of America, and capital of Morris county in New Jersey, containing a Presbyterian and Baptist church, a court-house, an academy, and about 50 compact houses; about 100 miles N.E. of Philadelphia.

MORRISVILLE, a town, or rather village, of Pennsylvania, in Berks county, on the west bank of Delaware river; 9 miles from Bristol.

MORRO de Bonifacio, a cape on the coast of Chili. S. lat. 39° 25'.

MORRO Chico, a cape on the coast of Honduras. N. lat. 15° 35'.

MORRO Cobir, a cape on the coast of Africa, in the Indian sea. N. lat. 8° 5'.

MORRO de Carapucho, a headland on the coast of Peru. S. lat. 19° 35'.

MORRO de los Diabolos, a headland on the coast of Peru. S. lat. 18°.

MORRO Hermoso, a cape on the west coast of California. N. lat. 27° 52'. E. long. 245° 7'.

MORRO Morena, a cape on the coast of Chili. S. lat. 23° 10'.

MORRO-Morro, a town of the government of Buenos Ayres, in the diocese of La Plata; 40 miles N.E. of Cocha.

MORRO de Puercos, a cape on the west coast of Mexico. N. lat. 7° 35'.

MORRO de S. Jorge, a cape on the west coast of America. S. lat. 24°.

MORRO Quemado, a headland on the coast of Peru. S. lat. 14° 20'.

MORRO de S. Josef, a headland on the coast of Peru. S. lat. 24°.

MORRON, a town of the island of Cuba; 40 miles N.W. of Villa del Principe.

MORRONE, a town of Naples, in Lavora; 8 miles E. of Capua.

MORROPE, a town of Peru, near the coast of the Atlantic, in the bishopric of Truxillo, and jurisdiction of Sana; lying on the road between Quito and Lima, and containing about 160 families, all Indians; 105 miles N.W. of Truxillo.

MORROSQUILLO, a bay of the Spanish main, on the coast of South America. N. lat. 9° 20'. W. long. 75° 40'.

MORS, an island of Denmark, in Lymfjord gulf, about 18 miles from north to south, with various breadth from 1 mile to 11 miles. It has several towns and villages. The chief place is Nikioping. N. lat. 56° 50'. E. long. 8° 47'.



MORS. See MEURS.

MORSCHANSK, a town of Russia, in the government of Tambov, on the Tzna; 56 miles N. of Tambov. N. lat.  $53^{\circ} 40'$ . E. long.  $41^{\circ} 34'$ .

MORSE, in *Zoology*, the name of a monstrous sea animal, called by some the rosmarus and walrus, and by others, very improperly, the hippopotamus and equus marinus.

The morse, or tricheus rosmarus of Linnæus, is an ill-shaped amphibious animal, of the size of a large ox, covered with a skin like that of the seal, and somewhat resembling an ox in the head; for which reason some have called it the sea-cow, or vacca marina; whence it has been erroneously confounded by some with the manati.

It has two large prominent and crooked tusks in the upper jaw, which are as fine as ivory, and are used by artificers for the same purposes; and four grinders on both sides above and below, but no cutting teeth. The teeth have been sometimes found of the weight of twenty pounds each. It brings forth usually but one young at a time, never more than two. It is a very strong and vigorous animal, and difficultly taken; when it is caught, it is usually at land, seldom at sea.

Vorstius, who met with a young one of this creature, has very accurately described it: whence we have the best description extant of the nature of the animal. This young one was of the size of a large dog, and in shape much resembled the phoca or sea-calf. Its head was round; its eyes large, and like those of an ox; its nostrils depressed and wide, and opening and drawing together, as the creature pleased; it had apertures on the sides of the head for ears; its mouth opened round, and not very large; and on the upper lip it had a sort of whiskers, composed of thick cartilaginous bristles; the lower jaw was of a trigonal form; the tongue short and thick, and the mouth well furnished with broad and flatted teeth; its fore-feet, as well as the hinder ones, were very broad; and the hinder extremity of its body very much resembled that of the phoca or sea-calf; when it walked, the fore-feet were directed forwards, the others turned backward; the toes were five on each foot, and these were joined by a membrane, which was remarkably thick; the hinder feet had claws, the fore-ones had not; and the creature had no tail, and crept rather than walked on the hinder parts; its skin was thick and tough, and covered with a few short grey hairs; it made a noise like the grunting of a hog.

These animals inhabit the coast of Spitzbergen, Nova Zembla, Hudson's bay, and the gulf of St. Lawrence, and the icy sea, as far as cape Tschuktschi: they are gregarious; in some places appear in herds of hundreds; are shy animals, and avoid places that are much haunted by mankind. The method of killing them on the Magdalene isles is said to be as follows: the hunters watch their landing, and as soon as they find a sufficient number for what they call a *cut*, go on shore, each armed with a spear, sharp on one side like a knife, with which they cut their throats; taking care not to stand in the way of those which attempt to get again to sea, which they do with great agility, by tumbling headlong; for they would crush any body to death by their vast weight. They are killed for the sake of their oil, one walrus producing about half a tun. The knowledge of this chase is of great antiquity: Oëther, the Norwegian, about the year 890, made a report of it to king Alired, having, as he says, made a voyage beyond Norway, for the convenience of fishing for horse-whales, which have in their teeth bones of great value, of which he brought some at his return to the king. Pennant.

MORSEE, in *Geography*. See MORGES.

MORSELLI, or MORSULI, are denominations given to those forms of medicine intended to be sucked in the month, as a lozenge; the word signifying a little mouthful.

MORSIGLIA, in *Geography*, a town of the island of Corsica; 21 miles N.N.W. of Bastia.

MORSKOM, a town of Sweden, in the province of Nyland; 16 miles N. of Borgo. N. lat.  $60^{\circ} 39'$ . E. long.  $25^{\circ} 49'$ .

MORSONA, a town of Naples, in the county of Molise; 14 miles N.E. of Molise.

MORSUS DIABOLI, in *Anatomy*, a whimsical name applied to the broad aperture of the Fallopian tube.

MORSUS Diaboli, *Devil's Bit*, in *Botany*, a plant of the scabious kind, which seems to have a fringe around the bottom of its root; otherwise called *succisa*. See SCABIOUS.

It has its denomination from its roots, which appear as if bitten off at the bottom; which superstitious people attributed to the devil, as done out of envy, lest we should have too much of so salutary a root. It was formerly looked on as a good alexipharmic; but is now much out of use.

MORSUS Canis Rabidi, in *Medicine*. See HYDROPHOBIA.

MORSUS Ranae, in *Botany*, Frog-bit. See HYDROCHARIS.

MORSUS Viperae. See VIPER.

MORT D'ANCESTRE, in *Law*. See ASSIZE of Mort d'Ancestre.

MORT, among the fishermen of some parts of England, a name given to the salmon while in its third year's growth.

MORT, La, in *Geography*, a lake of Upper Canada, where the traders have a post to purchase furs of the Indians; 40 miles N.N.W. from Sturgeon lake.

MORTA, a lake of Italy, in the Trevisan; 5 miles N. of Ceneda.

MORTA, in *Medicine*, an appellation given by Linnæus, and some others, to a supposed pestilential and mortal disease, which has been more commonly denominated *Pemphigus*, in consequence of the appearance of large vesicles, or bullæ, upon the skin, during the fever. It is probable, however, that the history of this vesicular fever is very incorrectly drawn, if it has not originated altogether in mistake. See PEMPHIGUS. See also Linnæi Genera Morborum, class i. gen. 1.

MORTAGNE, in *Geography*, a town of France, and principal place of a district, in the department of the Orne; 18 miles N.N.E. of Alençon. The place contains 5720, and the canton 13,998 inhabitants, on a territory of 155 kilometres, in 16 communes. N. lat.  $48^{\circ} 31'$ . E. long.  $0^{\circ} 27'$ .—Also, a town of France, in the department of the Vendee, and chief place of a canton, in the district of Montaigu; 33 miles N.N.E. of Luçon. The place contains 633, and the canton 9220 inhabitants, on a territory of 187½ kilometres, in 12 communes.—Also, a town of France, in the department of the Lower Charente; 12 miles S.S.W. of Saintes.

MORTAIN, a town of France, and principal place of a district, in the department of the Channel; 16 miles E. of Avranches. The place contains 2650, and the canton 10,705 inhabitants, on a territory of 157½ kilometres, in 10 communes.

MORTALITY, a term frequently used to signify a contagious disease, which destroys great numbers of either men or beasts.

MORTALITY, *Bills of*, are accounts or registers specifying the



## MORTALITY.

the numbers born, married, and buried in any parish, town, or district. In general they contain only these numbers; and, even when thus limited, are of great use, by shewing the degrees of healthiness and prolificness, and the progress of population in the places where they are kept. It is, therefore, much to be wished, that such accounts had been always correctly kept in every kingdom, and regularly published at the end of every year. We should then have had under our inspection the comparative strength of every kingdom, as far as it depends on the number of inhabitants, and its increase or decrease at different periods.

But such accounts are rendered more useful, when they include the ages of the dead, and the distempers of which they have died. In this case they convey some of the most important instruction, by furnishing us with the means of ascertaining the law which governs the waste of human life, the values of annuities dependent on the continuance of any lives, or any survivorships between them, and the favourable-ness or unfavourableness of different situations to the duration of human life. There are but few registers of this kind; nor has this subject, though so interesting to mankind, ever engaged much attention till lately. The first bills containing the ages of the dead were those for the town of Breslaw in Silesia. It is well known what use has been made of these by Dr. Halley, and after him by De Moivre. A table of the probabilities of the duration of human life at every age, deduced from them by Dr. Halley, has been published in the Philosophical Transactions (see the Abridgement, vol. iii. p. 669.) and has been inserted under the article *LIFE-ANNUITIES* in this work; and this is the first table of this sort that has been ever published. Since the publication of this table, similar bills have been established in a few towns of this kingdom; and particularly in London (in the year 1728), and at Northampton in 1735.

Two improvements of these registers have been proposed; the first is, that the sexes of all that die in every period of life should be specified in them, under the denominations of *boys, married men, widowers, and bachelors*; and of *girls, married women, widows, and virgins*. The second is, that they should specify the numbers of both sexes dying of every distemper, in every month, and at every age. (See the end of the second essay in Dr. Price's Treatise on Reversionary Payments, vol. ii. 7th edit.) Registers of mortality thus improved, when compared with the records of the seasons, and with the circumstances that discriminate different situations, might contribute greatly to the increase of medical knowledge; and they would afford the necessary data for determining the difference between the duration of human life among males and females; for such a difference there certainly is, much in favour of females, as will appear from the following facts, in addition to those which have been already recited under the article *MARRIAGE*, which the reader is desired to consult.

At Northampton, though more males are born than females, and nearly the same number die; yet the number of living females appeared, by an account taken in 1746, to be greater than the number of males, in the proportion of 2301 to 1770, or 39 to 30.

In the parish of Holy Cross, Salop, in the year 1760, the number of females turned of 80 was 13, of males 2. In the year 1770, these numbers were 11 and 6 respectively; and for 20 years, from 1760 to 1780, eleven out of 966 had died above 90 in this parish, and they were all females.

At Berlin it appeared, from an accurate account which was taken of the inhabitants in 1747, that the number of female citizens exceeded the number of male citizens in the proportion of 459 to 391. And yet out of this smaller

number of males, more had died for 20 years preceding 1751, in the proportion of 19 to 17.

At Edinburgh, in 1743, the number of females was to the number of males, as 4 to 3. (See Maitland's History of Edinburgh, p. 220.) But the females that died annually from 1749 to 1758, were to the males in no higher proportion than  $3\frac{1}{2}$  to 3.

He that will take the pains to examine the accounts in Phil. Transf. abr. vol. vii. part iv. p. 46, &c. referred to under *MARRIAGE*, will find, that though in the towns there enumerated, the proportion of males and females born is no higher than 19 to 18, yet the proportion of boys and girls that die is 8 to 7; and that, in particular, the still born and chrysom males are to the still born and chrysom females as 3 to 2. See *MARRIAGE*.

In thirty-nine parishes of the district of Vaud, in Switzerland, the number of males that died during ten years before 1766, was 8170; of females 8167; of whom the number that died under one year of age were 1817 males, and 1305 females; and under ten years of age 3099 males, and 2598 females. In the beginning of life, therefore, and before any emigrations can take place, the rate of mortality among males appears to be greater than among females. And this is rendered yet more certain by the following accounts. At Vevey, in the district of Vaud, just mentioned, there died in the course of twenty years, ended at 1764, in the first month after birth, of males 135 to 89 females; and in the first year 225 to 162. To the same effect it appears from a table given by Sufmilch, in his *Gottliche Ordnung*, vol. ii. p. 317, that in Berlin 203 males die in the first month, and but 168 females; and in the first year 489 males and but 395 females. And it also appears from a table of Struyck's, that in Holland 396 males die in the first year to 306 females.

The authorities for the facts here mentioned, and much more on this subject, may be found in the second volume of Dr. Price's Treatise on Reversionary Payments, seventh edition.

We shall here only add the following table, taken from a memoir of Mr. Wargentin's, published in the collection of the Memoirs of the Royal Academy of Sciences at Stockholm, printed at Paris in 1772.

In all Sweden for nine years, ended in 1763, the proportion of females to males that died out of a given number living, was

Under the age of one year	-	1000 to 1099
From 1 to 3 years of age	-	1000 — 1022
3—5	- - -	1042
5—10	- - -	1074
10—15	- - -	1080
15—20	- - -	1097
20—25	- - -	1283
25—30	- - -	1161
30—35	- - -	993
35—40	- - -	1159
40—45	- - -	1115
45—50	- - -	1340
50—55	- - -	1339
55—60	- - -	1292
60—65	- - -	1115
65—70	- - -	1080
70—80	- - -	1022
80—90	- - -	1046
Above 90	- - -	1044

Registers of mortality on the improved plan before-mentioned, were established in 1772 at Chester, and also in 1773



at Warrington in Lancashire; and they are so comprehensive and correct, that there is reason to expect they will afford much instruction on the subject of human mortality, and the values of lives.

But the country most distinguished in this respect is Sweden; for in that kingdom exact accounts have been taken of the births, marriages, and burials, and of the numbers of both sexes that died at all ages in every town and district; and also, at the end of every period of five years, of the numbers living at every age; and at Stockholm a society was established, whose business it was to superintend and regulate the enumerations, and to collect from the different parts of the kingdom the registers, in order to digest them into tables of observation. These regulations were begun in Sweden in 1755; and tables containing the result of them from 1755 to 1763, have been published in Mr. Wargentin's memoir just referred to, and the most material parts of them may be found in an essay by Dr. Price on the "Difference between the Duration of Human Life in Town and in Country Parishes," printed in the sixty-fifth volume of the Philosophical Transactions, part ii.

In the second essay in Dr. Price's "Treatise on Reverendary Payments and Life-Annuities," vol. ii. p. 73, the following account is given of the principles on which tables of observation are formed from registers of mortality; and of the proper method of forming them, so as to render them just representations of the number of inhabitants, and the probabilities of the duration of human life in a town or country.

"In every place which just supports itself in the number of its inhabitants, without any recruits from other places, or where, for a course of years, there has been no increase or decrease, the number of persons dying every year at any particular age, and above it, must be equal to the number of the living at that age. The number, for example, dying every year, at all ages, from the *beginning* to the *utmost extremity* of life, must, in such a situation, be just equal to the whole number *born* every year. And for the same reason, the number dying every year at *one* year of age and upwards; at *two* years of age and upwards; at *three* and upwards, and so on, must be equal to the numbers that attain to those ages every year; or, which is the same, to the numbers of the living at those ages. It is obvious, that unless this happens, the number of inhabitants cannot remain the same. If the former number is greater than the latter, the inhabitants must *decrease*; if less, they must *increase*. From this observation it follows, that in a town or country, where there is no increase or decrease, bills of mortality which give the ages at which all die, will shew the exact number of inhabitants; and also the exact law, according to which human life wastes in that town or country.

In order to find the number of inhabitants; the mean numbers dying annually, at every particular age and upwards, must be taken as given by the bills, and placed under one another in the order of the second column of the following tables. These numbers will, it has appeared, be the numbers of the living at 1, 2, 3, &c. years of age; and, consequently, the sum, diminished by half the number born annually, will be the whole number of inhabitants.

In such a series of numbers, the excess of each number above that which immediately follows it, will be the number dying every year, out of the particular number alive at the beginning of the year; and these excesses set down regularly as in the third column of the table to which we have re-

ferred, will shew the different rates at which human life wastes through all its different periods, and the different probabilities of life at all particular ages.

It must be remembered, that what has been now said goes on the supposition, that the place whose bills of mortality are given, supports itself, by procreation only, in the number of its inhabitants. In towns this very seldom happens, on account of the luxury and debauchery which generally prevail in them. They are, therefore, commonly kept up by a constant accession of strangers, or settlers, who remove to them from country parishes and villages. In these circumstances, in order to find the true number of inhabitants, and probabilities of life, from bills of mortality containing an account of the ages at which all die, it is necessary, that the proportion of the annual births to the annual settlers should be known, and also the period of life at which the latter remove. Both these particulars may be discovered in the following method.

If for a course of years there has been no sensible increase or decrease in a place, the number of annual settlers will be equal to the excess of the annual burials above the annual births. If there is an *increase*, it will be *greater* than this excess. If there is a *decrease*, it will be *less*.

The period of life at which these settlers remove, will appear in the bills by an increase in the number of deaths at that period and beyond it. Thus in the London bills, the number of deaths, between 20 and 30, is generally above double; and between 30 and 40, near triple the number of deaths between 10 and 20; and the true account of this is, that from the age of 18 or 20, to 35 or 40, there is an afflux of people every year to London from the country, which occasions a great increase in the number of inhabitants at these ages; and, consequently, raises the deaths for all ages *above* 20, considerably above their due proportion, when compared with the number of deaths *before* 20. This is observable in all the bills of mortality for towns with which we are acquainted, not excepting even the Breslaw bills. Dr. Halley takes notice, that these bills give the number of deaths between 10 and 20 too small. This he considered as an irregularity in them, owing to chance; and, therefore, in forming his table of observations, he took the liberty so far to correct it, as to render the proportion of those who die to the living in this division of life, nearly the same with the proportion which, he says, he had been *informed* die annually of the young lads in Christ-church hospital. But the truth is, that this irregularity in the bills was derived from the cause we have just assigned. During the five years for which the Breslaw bills are given by Dr. Halley, the births did, indeed, a little exceed the burials; but it appears, that this was the effect of some peculiar causes that happened to operate just at that time; for, during a complete century, from 1633 to 1734, the annual medium of births was 1089 (see Dr. Short's Comparative History, p. 63.), and of burials 1256. This town, therefore, must have been all along kept up by a number of yearly recruits from other places, equal to about a *seventh* part of the yearly births.

What has been now observed concerning the period at which people remove from the country to settle in towns, would appear sufficiently probable, were there no such evidence for it as we have mentioned; for it might be well reckoned, that these people in general must be single persons, in the beginning of mature life, who not having yet obtained settlements in the places where they were born, migrate to towns in quest of employment. Having premised these observations, we shall endeavour to explain distinctly, the effect which these accessions to towns must have on tables of



## MORTALITY.

of observation, formed from their bills of mortality; and the following general rule may be given on this subject.

If a place has, for a course of years, been maintained in a state nearly stationary, as to number of inhabitants, by recruits coming in every year, to prevent the decrease that would arise from the excess of the burials above the births; a table formed on the principle, "that the number dying annually, after every particular age, is equal to the number living at that age," will give the number of inhabitants, and the probabilities of life, too great for all ages preceding that at which the recruits cease, and after this it will give them right. If the accessions are so great as to cause an increase in the place, such a table will give the number of inhabitants, and the probabilities of life, too little, after the age at which the accessions cease; and too great, if there is a decrease. Before that age it will in both cases give them too great; but most considerably so in the former case, or when there is an increase.

If a place increases, not in consequence of accessions from other places, but of a constant excess of the births above the deaths; a table, constructed on the principle that has been mentioned, will give the probabilities of life too low through the whole extent of life; because, in such circumstances, the number of deaths in the first stages of life must be too great, in comparison of the number of deaths, in the latter stages; and more or less so, as the increase is more or less rapid. The contrary, in all respects, takes place where there is a decrease, arising from the excess of the deaths above the births.

For example. Let us suppose, that 244 of those born in a town, attain annually to 20 years of age; and that 250 more, all likewise twenty years of age, come into it annually from other places; in consequence of which, it has, for a course of years, been just maintained in the number of its inhabitants, without any sensible increase or decrease. In these circumstances, the number of the living in the town of the age of 20, will be always 244 natives and 250 settlers, or 494 in all; and, since these are supposed all to die in the town, and no more recruits are supposed to come in, 494 will be likewise the number dying annually at 20 and upwards. In the same manner it will appear, on these suppositions, that the number of the living, at every age, subsequent to 20, will be equal to the number dying annually at that age and above it; and consequently, that the number of inhabitants and decrements of life, for every such age, will be given exactly by the table. But for all ages before 20, they will be given much too great. For let 280 of all born in the town, reach 10; in this case, 280 will be the true number of the living in the town at the age of 10; and the recruits not coming in till 20, the number given by the bills, as dying between 10 and 20, will be the true number dying annually of the living in this division of life. Let this number be 36; and it will follow, that the table ought to make the numbers of the living at the ages between 10 and 20, a series of decreasing means between .80 and (280 diminished by 36, or) 244. But in forming the table on the principle just mentioned, 250 (the number above 20 dying annually in the town who were not born in it) will be added to each number in this series; and, therefore, the table will give the numbers of the living, and the probabilities of life in this division of life, almost twice as great as they really are. This observation, it is manifest, may be applied to all the ages under 20.

It is necessary to add, that such a table will give the number of inhabitants, and the probabilities of life equally wrong before 20, whether the recruits all come in at 20,

agreeably to the supposition just made, or only begin then to come in. In this last case, the table will give the number of inhabitants, and probabilities of life, too great throughout the whole extent of life, if the recruits come in at all ages above 20. But if they cease at any particular age, it will give them right only from that age; and before, it will err all along on the side of excess; but less considerably between 20 and that age, than before 20. For example: if, of the 250 supposed to come in at 20, only 150 then come in, and the rest at 30; the number of the living will be given 100 too high, at every age between 20 and 30; but, as just shewn, they will be given 250 too high at every age before 20. In general, therefore, the number of the living at any particular age must be given by the supposed table, as many too great as there are annual settlers after that age; and, if these supplies come in at all ages indiscriminately, during any certain interval of life, the number of inhabitants and the probabilities of life will be continually growing less and less wrong, the nearer any age is to the end of that interval. These observations prove, that tables of observation formed in the common way, from bills of mortality for places where there is an excess of the burials above the births, must be erroneous, for a great part of the duration of life, in proportion to the degree of that excess. They shew likewise at what parts of life the errors in such tables are most considerable, and how they may be in a great measure corrected.

All this shall be exemplified in the particular case of London.

The number of deaths between the ages of 10 and 20, is always so small in the London bills, that it seems certain few recruits come to London under 20; or, at least, not so many as before this age are sent out for education to schools and universities. After 20, great numbers come in till 30, and some, perhaps, till 40 or 50. But at every age after 50, it is probable, that more retire from London than come to it. The London tables of observation, therefore, being formed on the principle already mentioned, cannot give the probabilities of life right till 40. Between 30 and 40 they must be a little too high; but more so between 20 and 30; and most of all so before 20. It follows also, that these tables must give the number of inhabitants in London much too great.

The first of the following tables is formed in the manner here explained, from the London bills for ten years, from 1759 to 1768; and adapted to a 1000 born as a radix. The sum of the numbers in the second column, diminished by half the number born, is 25,757. According to this table, then, for every 1000 deaths in London, there are  $25\frac{1}{2}$  as many inhabitants; or, in other words, the expectation of a child just born is  $25\frac{1}{2}$ ; and the inhabitants are to the annual burials, as  $25\frac{1}{2}$  to 1. But it has appeared that the numbers in the second column, being given on the supposition, that all those who die in London were born there, must be too great; and we have from hence a demonstration, that the probabilities of life are given in the common tables, of London observations, too high, for, at least, the first 30 years of life; and also that the number of inhabitants in London must be less than  $25\frac{1}{2}$ , multiplied by the annual burials. The common tables, therefore, of London observations undoubtedly need correction, as Mr. Simpson suggested, and in some measure performed; though too imperfectly, and without going upon any fixed principles, or shewing particularly, how tables of observation ought to be formed, and how far in different circumstances, and at different ages, they are to be depended on. The way of doing this,



## MORTALITY.

this, and, in general, the right method of forming genuine tables of observation for towns, may be learnt from the following rule.

“From the sum of all that die annually, *after* any given age, subtract the number of annual settlers *after* that age; and the remainder will be the number of the living *at* the given age.”

This rule can want no explication or proof, after what has been already said.

If, therefore, the number of annual settlers in a town at every age could be ascertained, a perfect table of observations might be formed for that town, from bills of mortality, containing an account of the ages at which all die in it. But no more can be learnt in this instance, from any bills than the whole number of annual settlers, and the general division of life in which they enter. This, however, may be sufficient to enable us to form tables that shall be tolerably exact. For instance: suppose the annual deaths in a town which has not increased or decreased, to have been for many years in the proportion of 4 to 3, to the annual births. It will hence follow, that  $\frac{1}{4}$  of the persons who die in such a town are settlers, or emigrants from other places, and not natives; and the sudden increase in the deaths after 20, will also shew, agreeably to what was before observed, that they enter after this age. In forming, therefore, a table for such a town, a quarter of all that die at all ages throughout the whole extent of life, must be deducted from the sum of all that die after every given age before 20; and the remainder will be the true number living at that given age. And if, at 20, and every age above it, this deduction is omitted, or the number of the living at every such age is taken the same with the sum of all that die after it, the result will be (supposing *most* of the settlers to come in before 30, and *all* before 40) a table exact till 20; too high between 20 and 30; but nearly right for some years before 40; and after 40 exact again. Such a table, it is evident, will be the same with the table last described at all ages above 20, and different from it only under 20. It is evident also that, on account of its giving the probabilities of life too great for some years after 20, the number of inhabitants deduced from it may be depended on as somewhat greater than the truth; and more or less so as the annual recruits enter in general later or sooner after 20.

Let us now consider what the result of these remarks will be, when applied particularly to the London bills.

It must be here first observed, that, at least, one quarter of all that die in London are emigrants from the country, and not natives. The medium of annual burials for ten years, from 1759 to 1768, was 22,956; of births, 15,710. The excess is 7246, or near a *third* of the burials. The same excess, during ten years, before 1750, was 10,500, or near *half* the burials. London was then decreasing. For the last 12 or 15 years it has been increasing. This excess, therefore, agreeably to the foregoing observations, was then greater than the number of annual recruits, and it is now less. It is, however, here supposed, that the number of annual recruits is now no more than a quarter of the annual burials, in order to allow for more omissions in the births than the burials; and also, in order to be more sure of obtaining results that shall not exceed the truth.

Of every thousand then who die in London, only 750 are natives, and 250 are recruits, who come to it after 18 or 20 years of age; and, consequently, in order to obtain from the bills a more correct table than the first of the following tables, 250 must be subtracted from every one of the numbers in the second column till 20; and the numbers

in the third column must be kept the same, the bills always giving these right. After 20, the table is to be continued unaltered; and the result will be, a table which will give the numbers of the living at all ages in London much nearer the truth, but still somewhat too high. Such is the second of the following tables. The sum of all the numbers in the second column of this table, diminished by 500, is 20,750. For every 1000 deaths, therefore, in London, there are, according to this table, 20,750 living persons in it; or for every single death,  $20\frac{3}{4}$  inhabitants. It was before shewn, that the number of inhabitants in London could not be so great as  $25\frac{3}{4}$  times the deaths. It now appears (since the numbers in the second column of this table are too high) that the number of inhabitants in London cannot be so great as even  $20\frac{3}{4}$  times the deaths. And this is a conclusion which every one, who will bestow due attention on what has been said, will find himself forced to receive. It will not be amiss, however, to confirm it by the following fact, the knowledge of which is derived from the particular enquiry and information of Mr. Harris, the late ingenious master of the Royal Mathematical School in Christ-church Hospital. The average of lads in this school has, for thirty years past, been 831. They are admitted at all ages between seven and eleven; and few stay beyond sixteen; they are, therefore, in general, lads between the ages of eight and sixteen. They have better accommodations than it can be supposed children commonly have; and about three hundred of them have the particular advantage of being educated in the country. In such circumstances it may be well reckoned, that the proportion of children dying annually, must be less than the general proportion of children dying annually at the same ages in London. The fact is, that for the last thirty years,  $11\frac{1}{2}$  have died annually, or one in 70<sup>2</sup>.

According to Table II. of all who complete their eighth year in London, and who are living at that age, and at every intermediate age till 16, one in 74 die annually. It follows, therefore, that according to this table, supposing the lads in Christ-church school all admitted exactly at eight years of age, and none discharged before they have completed 16 years of age, or before they have resided eight years (suppositions much too favourable) only a 74th part ought to die annually. This table, therefore, gives the decrements of life in London at those ages too little, and the numbers of the living too great, and if this is true of these ages, it must be true of all ages under 20; and it follows demonstrably, in conformity to what was before shewn, that more people settle in London after 20, than the quarter supposed above; and that from 20 to 35 or 40 the numbers of the living are given too great in proportion to the decrements of life.

In this table the numbers in the second column are doubled at 20, agreeably to what really happens in London; and the sum of the numbers in this column diminished by half the whole number of deaths, gives the expectation of life, not of a child just born, as in other tables, but of all the inhabitants of London at the time they enter it, whether that be at birth, or at 20 years of age. The expectations, therefore, and the values of London lives under 20, cannot be calculated from this table. But it may be very easily fitted for this purpose, by finding the number of births which, according to the given decrements of life, will leave 494 alive at 20; and then adapting the intermediate numbers in such a manner to this radix, as to preserve all along the number of the living, in the same proportion to the numbers of the dead. This is done in the third of the following tables; and this table may be recommended as better adapted to the present state of London than any other table.

The



# MORTALITY.

The values of lives, however, deduced from it, are in general nearly the same with those deduced by Mr. Simpson from the London bills, as they stood forty years ago; the main difference is, that after 52, and in old age, this table gives them somewhat lower than Mr Simpson's table.

For the method of applying these observations in determining the number of inhabitants in London, &c. see *EXPECTATION of Life*.

Under the article *EXPECTATION*, an account has been given of the difference between the rate of human mortality in great towns and in country parishes and villages. The fourth and fifth of the following tables, compared with the two last, will give a more distinct and full view of this difference:

TABLE I.

Shewing the Probabilities of Life in London, on the Supposition that all who die in London were born there. Formed from the Bills for 10 Years, from 1759 to 1768.

Ages.	Persons living.	Decr. of Life.	Ages.	Persons living.	Decr. of Life.	Ages.	Persons living.	Decr. of Life.
0	000	240	31	404	9	62	132	7
1	760	99	32	395	9	63	125	7
2	661	42	33	386	9	64	118	7
3	619	29	34	377	9	65	111	7
4	590	21	35	368	9	66	104	7
5	569	11	36	359	9	67	97	7
6	558	10	37	350	9	68	90	7
7	548	7	38	341	9	69	83	7
8	541	6	39	332	10	70	76	6
9	535	5	40	322	10	71	70	6
10	530	4	41	312	10	72	64	6
11	526	4	42	302	10	73	58	5
12	522	4	43	292	10	74	53	5
13	518	3	44	282	10	75	48	5
14	515	3	45	272	10	76	43	5
15	512	3	46	262	10	77	38	5
16	509	3	47	252	10	78	33	4
17	506	3	48	242	9	79	29	4
18	503	4	49	233	9	80	25	3
19	499	5	50	224	9	81	22	3
20	494	7	51	215	9	82	19	3
21	487	8	52	206	8	83	16	3
22	479	8	53	198	8	84	13	2
23	471	8	54	190	7	85	11	2
24	463	8	55	183	7	86	9	2
25	455	8	56	176	7	87	7	2
26	447	8	57	169	7	88	5	1
27	439	8	58	162	7	89	4	1
28	431	9	59	155	8	90	3	1
29	422	9	60	147	8			
30	413	9	61	139	7			

TABLE II.

Shewing the *true* Probabilities of Life in London, till the Age of 19.

Ages.	Persons living.	Decr. of Life.	Ages.	Persons living.	Decr. of Life.
0	750	240	12	272	4
1	510	99	13	268	3
2	411	42	14	265	3
3	369	29	15	262	3
4	340	21	16	259	3
5	319	11	17	256	3
6	308	10	18	253	4
7	298	7	19	249	
8	291	6	20	494	
9	285	5	21	487	
10	280	4	&c.	&c.	
11	276	4			

The numbers in the second column to be continued as in the last table.

TABLE III.

Shewing the *true* Probabilities of Life in London, for all Ages. Formed from the Bills for 10 Years, from 1759 to 1768.

Ages.	Persons living.	Decr. of Life.	Ages.	Persons living.	Decr. of Life.	Ages.	Persons living.	Decr. of Life.
0	1518	486	31	404	9	62	132	7
1	1032	200	32	395	9	63	125	7
2	832	85	33	386	9	64	118	7
3	747	59	34	377	9	65	111	7
4	688	42	35	368	9	66	104	7
5	646	23	36	359	9	67	97	7
6	623	20	37	350	9	68	90	7
7	603	14	38	341	9	69	83	7
8	589	12	39	332	10	70	76	6
9	577	10	40	322	10	71	70	6
10	567	9	41	312	10	72	64	6
11	558	9	42	302	10	73	58	5
12	549	8	43	292	10	74	53	5
13	541	7	44	282	10	75	48	5
14	534	6	45	272	10	76	43	5
15	528	6	46	262	10	77	38	5
16	522	7	47	252	10	78	33	4
17	515	7	48	242	9	79	29	4
18	508	7	49	233	9	80	25	3
19	501	7	50	224	9	81	22	3
20	494	7	51	215	9	82	19	3
21	487	8	52	206	8	83	16	3
22	479	8	53	198	8	84	13	2
23	471	8	54	190	7	85	11	2
24	463	8	55	183	7	86	9	2
25	455	8	56	176	7	87	7	2
26	447	8	57	169	7	88	5	1
27	439	8	58	162	7	89	4	1
28	431	9	59	155	8	90	3	1
29	422	9	60	147	8			
30	413	9	61	139	7			



# MORTALITY.

TABLE IV.

Shewing the Probabilities of Life in the District of Vaud, Switzerland, formed from the Registers of 43 Parishes, given by M. Muret, in the first Part of the Bern Memoirs for the Year 1766.

Age.	Living.	Deer.	Age.	Living.	Deer.	Age.	Living.	Deer.
0	1000	189	35	539	6	70	168	15
1	811	46	36	533	6	71	153	13
2	765	30	37	527	7	72	140	11
3	735	20	38	520	7	73	129	10
4	715	14	39	513	7	74	119	10
5	701	13	40	506	6	75	109	11
6	688	11	41	500	6	76	98	13
7	677	10	42	494	6	77	85	14
8	667	8	43	488	6	78	71	13
9	659	6	44	482	6	79	58	12
10	653	5	45	476	7	80	46	10
11	648	5	46	469	8	81	36	7
12	643	4	47	461	10	82	29	5
13	639	4	48	451	10	83	24	4
14	635	4	49	441	10	84	20	3
15	631	5	50	431	9	85	17	3
16	626	4	51	422	8	86	14	3
17	622	4	52	414	8	87	11	2
18	618	4	53	406	9	88	9	2
19	614	4	54	397	9	89	7	2
20	610	4	55	388	11	90	5	1
21	606	4	56	377	13			
22	602	5	57	364	16			
23	597	5	58	348	17			
24	592	5	59	331	17			
25	587	5	60	314	15			
26	582	5	61	299	13			
27	577	5	62	286	12			
28	572	5	63	274	12			
29	567	4	64	262	12			
30	563	5	65	250	14			
31	558	5	66	236	16			
32	553	5	67	220	18			
33	548	4	68	202	18			
34	544	5	69	184	16			

TABLE V.

Shewing the Probabilities of Life in a country Parish in Brandenburg, formed from the Bills for 50 Years, from 1710 to 1759, as given by Mr. Sufmilch, in his Gottliche Ordnung.

Age.	Living.	Deer.	Age.	Living.	Deer.	Age.	Living.	Deer.
0	1000	225	35	462	6	70	166	13
1	775	57	36	456	6	71	153	15
2	718	31	37	450	6	72	138	16
3	687	23	38	444	6	73	112	15
4	664	22	39	438	6	74	107	14
5	642	20	40	432	5	75	93	13
6	622	15	41	427	5	76	80	12
7	607	12	42	422	5	77	68	9
8	595	10	43	417	5	78	59	8
9	585	8	44	412	6	79	51	7
10	577	7	45	407	6	80	44	6
11	570	6	46	400	6	81	38	6
12	564	5	47	394	6	82	32	6
13	559	5	48	388	7	83	25	6
14	554	5	49	381	7	84	21	5
15	549	5	50	374	7	85	15	4
16	544	5	51	367	8	86	11	3
17	539	4	52	359	8	87	8	2
18	535	4	53	351	8	88	6	2
19	531	4	54	343	9	89	4	1
20	527	5	55	334	10	90	3	1
21	522	5	56	324	10	91	2	1
22	517	5	57	314	10	92	1	1
23	512	5	58	304	11			
24	507	5	59	293	11			
25	502	4	60	282	11			
26	498	3	61	271	11			
27	495	3	62	260	12			
28	492	3	63	248	12			
29	489	3	64	236	12			
30	486	4	65	224	12			
31	482	5	66	213	11			
32	477	5	67	202	11			
33	472	5	68	190	12			
34	467	5	69	178	12			

All the bills, from which this and the following tables are formed, give the numbers dying under 1 as well as under 2 years; and, in the numbers dying under 1, are included, in the country parish in Brandenburg, and at Berlin, all the still-borns. All the bills also give the numbers dying in every period of five years.



# MORTALITY.

TABLE VI.

Shewing the Probabilities of Life at Vienna, formed from the Bills for eight Years, as given by Mr. Sufmilch, in his Gottliche Ordnung, p. 32. Tables.

Age.	Living.	Decr.	Age.	Living.	Decr.	Age.	Living.	Decr.
0	1495	682	35	340	8	70	71	6
1	813	107	36	332	8	71	65	5
2	706	61	37	324	8	72	60	5
3	645	46	38	316	9	73	55	4
4	599	33	39	307	9	74	51	4
5	566	30	40	298	8	75	47	5
6	536	20	41	290	7	76	42	5
7	516	11	42	283	6	77	37	5
8	505	9	43	277	6	78	32	5
9	496	7	44	271	7	79	27	4
10	489	6	45	264	8	80	23	3
11	483	5	46	256	9	81	20	2
12	478	5	47	247	9	82	19	2
13	473	6	48	238	9	83	16	2
14	467	6	49	229	9	84	14	2
15	461	6	50	220	8	85	12	2
16	455	7	51	212	7	86	10	2
17	448	6	52	205	7	87	8	2
18	442	6	53	198	7	88	6	2
19	436	6	54	191	7	89	4	1
20	430	5	55	184	8	90	3	1
21	425	5	56	176	8	91	2	1
22	420	5	57	168	9	92	1	1
23	415	6	58	159	7			
24	409	6	59	151	8			
25	403	6	60	143	7			
26	397	6	61	136	7			
27	391	7	62	129	6			
28	381	7	63	123	7			
29	377	7	64	116	7			
30	370	6	65	109	8			
31	364	6	66	101	8			
32	358	5	67	93	8			
33	353	6	68	85	7			
34	347	7	69	78	7			

TABLE VII.

Shewing the Probabilities of Life at Berlin, formed from the Bills for four Years, from 1752 to 1755, given by Mr. Sufmilch, in his Gottliche Ordnung, vol. ii. p. 37. Tables.

Age.	Living.	Decr.	Age.	Living.	Decr.	Age.	Living.	Decr.
0	1427	524	35	347	8	70	80	6
1	993	151	36	339	9	71	74	6
2	752	61	37	330	10	72	68	6
3	691	73	38	320	10	73	62	5
4	618	45	39	310	10	74	57	5
5	573	21	40	300	10	75	52	5
6	552	15	41	290	9	76	47	5
7	536	13	42	281	8	77	42	5
8	523	9	43	274	7	78	37	5
9	514	7	44	266	7	79	32	4
10	507	5	45	259	7	80	28	4
11	502	4	46	252	7	81	24	3
12	498	4	47	245	7	82	21	2
13	494	4	48	238	7	83	19	2
14	490	4	49	231	7	84	17	2
15	486	4	50	224	7	85	15	2
16	482	5	51	217	7	86	13	2
17	477	5	52	210	7	87	11	2
18	472	5	53	203	8	88	9	2
19	467	6	54	195	8	89	7	1
20	461	6	55	187	8	90	6	1
21	455	6	56	179	8	91	5	1
22	449	6	57	171	8	92	4	1
23	443	7	58	163	9	93	3	1
24	436	8	59	154	9	94	2	1
25	428	9	60	145	8			
26	421	9	61	137	7			
27	412	9	62	130	6			
28	403	9	63	124	6			
29	394	9	64	118	6			
30	385	9	65	112	6			
31	376	9	66	106	7			
32	368	8	67	99	7			
33	361	7	68	92	6			
34	354	7	69	86	6			

This writer has also given the bills of the parish of St. Peter, at Berlin, for 24 years; and a table formed from them agrees nearly with this.



# MORTALITY.

TABLE VIII.

Shewing the Probabilities of Life in the Kingdom of Sweden among Males and Females, according to the Medium of Seven different Enumerations in 1757, 1760, 1763, 1766, 1769, 1772, and 1775.

Males.			Females.	
Born 10,282—282 born dead.			Born 10,277—217 born dead.	
Age.	Living.	Decrease.	Living.	Decrease.
Born alive	10,000	2300	10,000	2090
1 year	7,700	500	7,910	518
2	7,200	337	7,392	350
3	6,863	240	7,042	250
4	6,623	150	6,792	135
5	6,473	125	6,657	120
6	6,348	105	6,537	105
7	6,243	90	6,432	85
8	6,153	75	6,347	70
9	6,078	65	6,277	60
10	6,013	55	6,217	52
11	5,958	45	6,165	46
12	5,913	45	6,119	40
13	5,868	40	6,079	35
14	5,828	40	6,044	35
15	5,788	39	6,009	35
16	5,749	39	5,974	40
17	5,710	39	5,934	40
18	5,671	44	5,894	42
19	5,627	44	5,852	43
20	5,583	50	5,809	43
21	5,533	50	5,766	43
22	5,483	50	5,723	43
23	5,433	55	5,680	44
24	5,378	55	5,636	45
25	5,323	55	5,591	45
26	5,268	55	5,546	50
27	5,213	55	5,496	52
28	5,158	55	5,444	55
29	5,103	56	5,389	55
30	5,049	59	5,334	60
31	4,988	60	5,274	60
32	4,928	60	5,214	65
33	4,868	60	5,149	65
34	4,808	60	5,084	65
35	4,748	60	5,019	60
36	4,688	60	4,959	56
37	4,628	60	4,903	56
38	4,568	60	4,847	56
39	4,508	60	4,791	58
40	4,448	65	4,733	65
41	4,383	72	4,668	75
42	4,311	80	4,593	76
43	4,231	80	4,517	76
44	4,151	80	4,441	75

Males.			Females.	
Age.	Living.	Decrease.	Living.	Decrease.
45	4,071	80	4,366	72
46	3,991	80	4,294	67
47	3,911	80	4,227	65
48	3,831	80	4,162	65
49	3,751	85	4,097	70
50	3,666	95	4,027	75
51	3,571	95	3,952	80
52	3,476	95	3,872	85
53	3,381	95	3,787	85
54	3,286	95	3,702	85
55	3,191	95	3,617	85
56	3,096	95	3,532	85
57	3,001	100	3,447	90
58	2,901	100	3,357	90
59	2,801	100	3,267	100
60	2,701	105	3,167	110
61	2,596	110	3,057	118
62	2,486	115	2,939	120
63	2,371	115	2,819	120
64	2,256	115	2,699	120
65	2,141	115	2,579	120
66	2,026	115	2,459	120
67	1,911	120	2,339	120
68	1,791	125	2,219	120
69	1,666	125	2,099	120
70	1,541	125	1,979	130
71	1,416	125	1,849	140
72	1,291	120	1,709	150
73	1,171	120	1,559	160
74	1,051	110	1,399	150
75	941	105	1,249	140
76	836	100	1,109	130
77	736	90	979	120
78	646	85	859	110
79	561	80	749	100
80	481	75	649	95
81	406	70	554	90
82	336	65	464	85
83	271	60	379	80
84	211	50	299	75
85	161	40	224	55
86	121	30	169	40
87	91	22	129	30
88	69	17	99	23
89	52	14	76	18
90	38	12	58	15
91	26	9	43	12
92	17	7	31	10
93	10	6	21	8
94	4	3	13	6
95	1	1	7	4
96	0	0	3	2
97	0	0	1	1



## MORTAR.

**MORTAR**, or **MORTER**, in *Architecture*, a composition of lime, sand, &c. mixed up with water: serving as a cement to bind the stones, &c. of a building.

The ancients had a kind of mortar so very hard and binding, that, after so long a duration as to this time, it is next to impossible to separate the parts of some of their buildings; though there are some who ascribe that excessive strength to time, and the influence of certain properties in the air, which is, indeed, found to harden some bodies very surprisingly.

The lime used in the ancient mortar, is said to have been burnt from the hardest stones, or often from fragments of marble.

De Lorme observes, that the best mortar is that made of pozzolana for sand; adding, that this penetrates black flints, and turns them white. See *POZZOLANA*, and *Puteolanus PULVIS*.

Mr. Worledge observes, that fine sand makes weak mortar, and that the larger the sand the stronger the mortar. He therefore advises, that the sand be washed before it is mixed; and adds, that dirty water weakens the mortar considerably.

Wolfius observes, that the sand should be dry and sharp, so as to prick the hands when rubbed; yet not earthy, so as to foul the water in which it is washed.

Vitruvius observes, that fossile sands dry sooner than those taken out of rivers. Whence he adds, the latter is fitted for the insides, the former for the outides of a building. He subjoins, that fossile sand, lying long in the air, becomes earthy. Palladio takes notice, that of all sands white ones are the worst; and the reason is owing to their want of asperity.

The proportion of lime and sand in our common mortar is extremely variable: Vitruvius prescribes three parts of pit-sand, and two of river-sand, to one of lime; but the quantity of sand here seems to be too great.

The proportion most commonly used in the mixing of lime and sand is, to a bushel of lime a bushel and a half of sand, *i. e.* two parts of lime and three of sand; though the common mortar, in and about London, has more sand in it than according to this proportion. The improvement of mortar is certainly an object of great importance: and different schemes have been suggested for giving it that degree of durability for which the mortar used by the ancients is so justly celebrated.

Mr. Dossie, in the second volume of the *Memoirs of Agriculture*, p. 20, &c. gives the following method of making mortar impenetrable to moisture, acquiring great hardness, and exceedingly durable, similar to that used by the ancients, which was discovered by a gentleman of Neufchatel: take of unslaked lime and of fine sand, in the proportion of one part of the lime to three parts of the sand, as much as a labourer can well manage at once; and then adding water gradually, mix the whole well together with a trowel, till it be reduced to the consistence of mortar. Apply it immediately, while it is hot, to the purpose, either of mortar, as a cement to brick or stone, or of plaster to the surface of any building. It will then ferment for some days in drier places, and afterwards gradually concrete, or set, and become hard: but in a moist place it will continue soft for three weeks or more; though it will, at length, attain a firm consistence, even if water have such access to it so as to keep the surface wet the whole time. After this, it will acquire a stone-like hardness, and resist all moisture. The perfection of this mortar depends on the ingredients being thoroughly blended together; and the mixture being applied immediately after to the place where it is wanted. The lime for this mortar must be made of lime-stone, shells, or marle;

and the stronger it is, the better the mortar will be; besides, the lime should be carefully kept from the access of air or wet; otherwise, by attracting moisture, it will lose proportionably that power of acting on the sand, by which the incorporation is produced. It is proper also to exclude the sun and wind from the mortar, for some days after it is applied; that the drying too fast may not prevent the due continuance of the fermentation, which is necessary for the action of the lime on the sand. When a very great hardness and firmness are required in this mortar, the using of skimmed milk instead of water, either wholly or in part, will produce the desired effect, and render the mortar extremely tenacious and durable.

M. Lorient's mortar, the method of making which was announced by order of his majesty at Paris in 1774, is made in the following manner: take one part of brick-dust finely sifted, two parts of fine river-sand screened, and as much old slaked lime as may be sufficient to form mortar with water, in the usual method, but so wet as to serve for the slaking of as much powdered quick-lime as amounts to one-fourth of the whole quantity of brick-dust and sand. When the materials are well mixed, employ the composition quickly, as the least delay may render the application of it imperfect or impossible. Another method of making this composition is to make a mixture of the dry materials; *i. e.* of the sand, brick-dust, and powdered quick-lime, in the prescribed proportion; which mixture may be put in sacks, each containing a quantity sufficient for one or two troughs of mortar. The above-mentioned old slaked lime and water being prepared apart, the mixture is to be made in the manner of plaster, at the instant when it is wanted, and is to be well chafed with the trowel. With respect to this method, Dr. Higgins observes, that M. Lorient corrects the bad quality of the old and effete lime, which constitutes the basis of his mortar, and which has regained a part of the fixed air that had been expelled from it, by the addition of fresh and non-effervescent lime, hastily added to it, at the time of using the composition, which must undoubtedly improve the imperfect mass. And he adds, that when an ignorant artist makes mortar with whiting instead of lime, he can mend it considerably by adding lime to it; but his mortar will still be defective, in comparison with the best that may be made, by reason of the old slaked lime or whiting; this on repeated trials he has found to be the true state of the case. Dr. Higgins has made a variety of experiments, in consequence of the modern discoveries relating to fixed air, for the purpose of improving the mortar used in our buildings. According to this author, the perfection of lime, prepared for the purpose of making mortar, consists chiefly in its being totally deprived of its fixed air. On examining several specimens of the lime commonly used in building, he found that it is seldom or never sufficiently burned; for they all effervesced, and yielded more or less fixed air, on the addition of an acid, and slaked slowly, in comparison with well burned lime. Dr. Higgins also relates some experiments, which shew how very quickly lime imbibes fixed air from the atmosphere; on its exposure to which it by degrees soon loses those characters which chiefly distinguish it from mere lime-stone or powdered chalk: by soon attracting from thence that very principle, to the absence of which it owes its useful quality as a cement, and which had before been expelled from it in the burning. Hence he concludes, that, as lime owes its excellence to the expulsion of fixed air from it in the burning, it should be used as soon as possible after it is made, and guarded from exposure to the air, as much as possible, before it is used. It is no wonder, therefore, he says, that the London mortar is bad, if the imperfection of it depended solely on the badness of the lime; since the



## MORTAR.

lime employed in it is not only bad when it comes fresh from the kiln, because it is insufficiently burned, and the air has access to it, but becomes worse before it is used, by the distance and mode of its conveyance, and when slaked, is as widely different from good lime, as it is from powdered chalk. For a similar reason, every other cause, which tends to restore to the lime the fixed air, of which it had been deprived in the burning, must deprave it. It must receive this kind of injury, for instance, from the water, so largely used, first in slaking the lime, and afterwards in making it into mortar; if that water contains fixed air, from which few waters are perfectly free, and which will greedily be attracted by the lime. The injury arising from this cause is prevented by the substitution of lime-water, so far as may be practicable or convenient.

From other experiments, made with the view of ascertaining the best relative proportions of lime, sand and water, in the making of mortar, it appeared that those specimens were the best which contained one part of lime in seven of the sand; for those which contained less lime, and were too short whilst fresh, were more easily cut and broke, and were pervious to water; and those which contained more lime, although they were closer in grain, did not harden so soon, or to so great a degree, even when they escaped cracking by lying in the shade to dry slowly. It appeared farther, that mortar, which is to be used where it must dry quickly, ought to be made as stiff as the purpose will admit, or, with the smallest practicable quantity of water, and that mortar will not crack, although the lime be used in excessive quantity, provided it be made stiffer, or to a thicker consistence than mortar usually is.

Dr. Higgins has also shewn, that though the setting of mortar, as it is called by the workmen, chiefly depends on the exsiccation of it, yet its induration, or its acquiring a stony hardness, is not caused by its drying, as has been supposed, but is principally owing to its absorption of fixed air from the atmosphere, and is promoted in proportion as it acquires this principle; the accession of which is indispensably necessary to the induration of calcareous cements. In order to the greatest induration of mortar, therefore, it must be suffered to dry gently and set; the exsiccation must be effected by temperate air, and not accelerated by the heat of the sun or fire; it must not be wetted soon after it sets; and afterwards it ought to be protected from wet as much as possible, until it is completely indurated; the entry of acidulous gas must be prevented as much as possible, until the mortar is finally placed and quiescent; and then it must be as freely exposed to the open air as the work will admit, in order to supply acidulous gas, and enable it sooner to sustain the trials to which mortar is exposed in cementitious buildings, and incrustations.

Dr. Higgins has also enquired into the nature of the best sand or gravel for mortar, and into the effects produced by bone-ashes, plaster powder, charcoal, sulphur, &c. and he deduces great advantages from the addition of bone-ashes, in various proportions, according to the nature of the work for which the composition is intended.

This author describes a water-cement or stucco, of his own invention, for incrustations internal and external, exceeding, as he says, Portland stone in hardness, for which he obtained his majesty's letters patent in 1779. As for the materials of which this is made; drift sand, or quarry sand, or, as it is commonly called, pit sand, consisting chiefly of hard quartose flat-faced grains, with sharp angles, the most free from clay, salts, and calcareous, gypseous, or other grains, less durable than quartz, containing the smallest quantity of pyrites, or heavy metallic matter, inseparable by washing, and admitting the least diminution in

bulk by washing, is to be preferred to any other. The sand is to be sifted in streaming clear water, through a sieve which shall give passage to all such grains as do not exceed one sixteenth of an inch in diameter: and the stream of water and sifting are to be so regulated, that all the sand, which is much finer than the Lynn sand, together with clay and other matter, specifically lighter than sand, may be washed away with the stream; whilst the purer and coarser sand, which passes through the sieve, subsides in a convenient receptacle; and whilst the coarse rubbish and shingle remain on the sieve to be rejected. The subsiding sand is then washed in clean streaming water, through a finer sieve, so as to be farther cleansed and sorted into two parcels, a coarser, which will remain in the sieve which is to give passage to such grains of sand only as are less than one thirtieth of an inch in diameter, and which is to be saved apart under the name of coarse sand; and a finer, which will pass through the sieve and subside in the water, and which is to be saved apart under the name of fine sand. These are to be dried separately, either in the sun, or on a clean iron plate set on a convenient surface, in the manner of a sand heat. Let the lime be chosen, which is stone-lime, which heats the most in slaking, and slakes the quickest when duly watered; which is the freshest made and most closely kept; which dissolves in distilled vinegar with the least effervescence, and leaves the smallest residue insoluble, and in this residue the smallest quantity of clay, gypsum, or martial matter. Let this lime be put in a brass-wired fine sieve, to the quantity of fourteen pounds. Let the lime be slaked by plunging it in a butt, filled with soft water, and raising it out quickly and suffering it to heat and fume, and by repeating this plunging and raising alternately, and agitating the lime, until it be made to pass through the sieve into the water: reject the part of the lime that does not easily pass through the sieve; and use fresh portions of lime, till as many ounces of lime have passed through the sieve as there are quarts of water in the butt. Let the water, thus impregnated, stand in the butt, close covered, until it becomes clear; and, through wooden cocks placed at different heights in the butt, draw off the clear liquor, as fast and as low as the lime subsides, for use. This clear liquor is called the cementing liquor. Let fifty-six pounds of the foresaid chosen lime be slaked, by gradually sprinkling on it, and especially on the unslaked pieces, the cementing liquor, in a close clean place. Let the slaked part be immediately sifted through the fine brass-wired sieve. Let the lime which passes be used instantly, or kept in air-tight vessels, and let the part of the lime which does not pass through the sieve be rejected: the other part is called purified lime. Let bone-ash be prepared in the usual manner by grinding the whitest burnt bones; but let it be sifted to be much finer than the bone-ash commonly sold for making cupels. Having thus prepared the materials, take fifty-six pounds of the coarse sand, and forty-two pounds of the fine sand; mix them on a large plank of hard wood placed horizontally: then spread the sand so that it may stand to the height of six inches, with a flat surface on the plank; wet it with the cementing liquor; to the wetted sand add fourteen pounds of the purified lime, in several successive portions, mixing and beating them up together; then add fourteen pounds of the bone-ash in successive portions, mixing and beating all together. This Dr. Higgins calls the water-cement coarse-grained, which is to be applied in building, pointing, plastering, stuccoing, &c. observing to work it expeditiously in all cases, and in stuccoing to lay it on by sliding the trowel upwards upon it; to well wet the materials used with it, or the ground on which it is laid, with the cementing liquor, at  
the



## MORTAR.

the time of laying it on; and to use the cementing liquor for moistening the cement and facilitating the floating of it.

If a cement of a finer texture be required, take ninety-eight pounds of the fine sand, wet it with the cementing liquor, and mix it with the purified lime and the bone-ash as above, with this difference, that fifteen pounds of lime are to be used instead of fourteen pounds, if the greater part of the sand be as fine as Lynn sand. This is called water-cement fine-grained; and is used in giving the last coating or the finish to any work, intended to imitate the finer grained stones or stucco. For a cheaper and coarser cement, take of coarse sand or shingle fifty-six pounds, of the foregoing coarse sand twenty-eight pounds, and of the finer sand fourteen pounds; and after mixing and wetting these with the cementing liquor, add fourteen pounds, or somewhat less, of the purified lime, and then as much of the bone-ash, mixing them together. When the cement is required to be white, white sand, white lime, and the whitest bone-ash are to be chosen. Grey sand, and grey bone-ash, formed of half-burnt bones, are to be chosen to make the cement grey; and any other colour is obtained, either by chusing coloured sand, or by the admixture of the necessary quantity of coloured talc in powder, or of coloured vitreous or metallic powders, or other durable colouring ingredients, commonly used in paint. The water-cement above described is applicable to forming artificial stone; by making alternate layers of the cement and of flint, hard stone, or brick, in moulds of the figure of the intended stone, and by exposing the masses so formed to the open air to harden. When it is required for water fences, two-thirds of the bone-ashes are to be omitted, and in its stead an equal measure of powdered terras is to be used. When the cement is required of the finest grain, or in a fluid form, so that it may be applied with a brush, flint powder, or the powder of any quartose or hard earthy substance, may be used in the place of sand, so that the powder shall not be more than six times the weight of the lime, nor less than four times its weight. For inside work, the admixture of hair with the cement is useful. Higgins's Exp. and Obs. on Calcareous Cements, &c. 8vo. 1780, passim. See STUCCO.

**MORTAR, Mixing and Blending of.** M. Felibien observes, that the ancient masons were so very scrupulous in this process, that the Greeks kept ten men constantly employed, for a long space of time, to each basin; this rendered the mortar of such prodigious hardness, that Vitruvius tells us the pieces of plaster falling off from old walls served to make tables. The same Felibien adds, it is a maxim among old masons to their labourers, that they should dilute with the sweat of their brow, i. e. labour it a long time, instead of drowning it with water to have done the sooner.

**MORTAR-Mill,** in *Rural Economy*, a machine contrived by Mr. Supple, for the purpose of saving labour in the making up of mortar, as well as doing the business more effectually and at a trifling expence. It may also be useful in working clay, &c.

And the mode of doing it is thus described by the inventor: "A pit is dug in the ground, which is bricked at the bottom and sides, into which the operator puts the lime. He has the command of a small stream of water, which is conveyed at pleasure into the pit, and in a few days the lime is sufficiently slaked; he then puts the lime and sand, or gravel, into the mill, which not only mixes both together, but incorporates them in a very effectual manner; and, as the lime is sufficiently moist when taken out of the pit, no more water is required for the mortar. If for present use, the quantity he makes at a time is six bushels, as he finds when more is put in, it is apt to strain the cogs, if not made very strong. If the mortar is made with sand

alone, the space between the cogs need not be made so wide as three inches. He has a second shaft, with closer cogs, in order to give the mortar another working; the space between these cogs is but two inches; but it does not answer well till after the first shaft has been used, nor is it necessary, unless for very nice work." He adds, that he "made 200 barrels of lime into mortar last summer, and has now the like quantity of lime in the pit for the same purpose. He made six barrels of mortar in a day with ease; a boy of seven years old drives the horse, and the most indifferent one is good enough for the purpose, the draught being so easy." This machine may be wrought by any other power, as water, wind, or steam.

The nature, plan, and construction of the machine are seen at fig. 4, in *Plate XXIV. Miscellany*, in which A is the plan of the boarded floor, raised eight inches from the ground, four feet two inches in diameter, and surrounded by a fourteen-inch wall, whose outside height is two feet. B, a sliding door, two feet wide. C, plan of the shaft, with its cogs, or teeth; its length eleven feet eight inches, breadth eight inches, depth five inches. D, plan of the post, or axis, on which the shaft turns round; diameter seven inches, height twenty inches. E E, plan and upright of one of the cogs as it stands in the mill. The plan is a rhombus, the longest diagonal is three inches, the shortest but two, in order to make the angles of the cogs more acute, by which means they will pass through the mortar with the greater ease. F, elevation and section of the mill in perspective.

The inventor states, that the space between the cogs is three inches, except the first to the left of the post, which is but half an inch distant from it, in order to give the cogs to the left a different direction from those on the right; and its use will, by inspection, readily appear. There must be a space of two inches between the end of the cogs and the floor, in order to give the gravel a free passage, which would otherwise strain the cogs, and stop the course of the mill."

Besides the common mortar used in laying of stones, bricks, &c. there are several other kinds: as,

**MORTAR, White,** used in plastering the walls and ceilings; made of ox or cow's hair mixed with lime and water, without any sand. The common method of making this mortar is one bushel of hair to six bushels of lime.

**MORTAR used in making Water-Courses, Cisterns, &c.** is very hard and durable, being made of lime and hogs-grease, sometimes mixed with the juice of figs, and sometimes with liquid pitch; and, after application, is washed over with linseed-oil. See BETON.

For this purpose, mortar made of terras, pozzolana, tile-dust, or cinders, is mixed and prepared in the same manner as common mortar: only that these ingredients are mixed with lime, instead of sand, in a due proportion, which is about half and half. The lime should be made of shells or marble; and in works which are sometimes dry and sometimes wet, instead of terras, which is very dear, tile-dust or cinder-dust may be used.

**MORTAR for Furnaces, &c.** See LUTE.

**MORTAR for Sun-Dials** on walls may be made of lime and sand, tempered with linseed-oil; or, for want of that, with skimmed milk. This will grow to the hardness of a stone.

For buildings, one part of washed soap-ashes, mixed with another of lime and sand, make a very durable mortar. See CEMENT.

The saltpetre workers in France using the mortar of old buildings for extracting that salt, M. Petit has thought it worthy a peculiar attention, and has made several trials, by way of analysis of mortar, to determine whether it really



## MORTAR.

and essentially contains nitre in it, or whether it be only serviceable in that mixture of salts from which nitre is produced.

The common managers of the saltpetre works are of opinion, that mortar contains in it all the saltpetre they procure from it; and that the wood-ashes, and other substances they use with it, only serve to absorb the fat or oily parts, and to set the saltpetre at liberty to shoot. This they pretend to affirm upon experience; but they do not consider, that though they can procure saltpetre from the rubbish or mortar without the addition of wood-ashes, yet it is not pure mortar that they make their experiments upon, but such as is taken from their own heaps, upon which they always throw all the residuum of their former works, and all that liquor which will shoot no more crystals, but which they call the mother-water of saltpetre.

This gentleman, therefore, very properly judged, that to make a regular trial of the mortar or rubbish alone, he must not take it from their stores, used in the saltpetre works, but pick it himself from the ruins of old buildings.

The mark the saltpetre workers have to know good mortar for their purpose is, that it tastes acrid and salt when applied to the tongue; but to this it may be also added, that it ought to be of a greyish colour, and such as, when powdered and sprinkled upon burning charcoal, yields some sparks of fire; and the more sparks it gives, the better it is for the purpose: and another character of the goodness is, that these well impregnated mortars have a certain unctuousity or fattiness to the touch, which other kinds have not.

The finest of all kinds of mortar for saltpetre work is such as is had from the ruins of old buildings in a low situation, and out of the way of much sunshine; where there has been no great quantity of fire kept, and especially such as has served for the cements of the walls of stables, or the like.

M. Petit chose from such a wall twelve pounds of old mortar: this he had beaten to powder, and poured upon it eighteen pints of water; the whole was then set over the fire, and stirred from time to time for three or four hours, that the water might be well tintured from the mortar; after this the water was filtered through paper, and was then found to be tintured to a pale, yellow, transparent bitter, and somewhat acrid to the taste.

The impregnation may be made without heat, by only stirring the mortar about for nine or ten days in cold water, and a quantity of the salt taken up will be according to the goodness of the mortar and the quantity of water employed. The common specific gravity of this liquor to water is as 32 to 31, or thereabouts. M. Petit having procured the tincture of fifty pounds of mortar, by several impregnations, in 72 French pints of water, evaporated it so far till it appeared highly charged with saline particles, tasting very acrid and bitter, and being of a brownish-red colour; and its specific gravity was in this state to water as 4 to 3, there being more in quantity than about four pints. This was still limpid and of a dusky colour, and was afterwards evaporated over a gentle fire, to the consistence of an extract, which, as it cooled, became much thicker and firmer, resembling butter. This being left open to the air, soon relented into a liquor of the consistence of a syrup: its specific gravity was now to water as 5 to 3; but in leaving it open to the air, it continually attracted fresh humidity, and became less specifically heavy. Experiments made with this extract succeeded in the following manner:

1. It turned the common blue paper to a fine deep red. The impregnations in water uninfusated do this also in different degrees, according to their strength.

2. Mixed in equal quantities with spirit of nitre and with spirit of sea-salt, it made no effervescence or alteration in either.

3. A leaf of gold being put into the mixture of this impregnation with spirit of nitre, was immediately dissolved; and in an hour or two afterwards, the liquor was much clearer than before.

A leaf of gold being put into the mixture of this impregnation and spirit of sea-salt, was in the same manner dissolved in a few minutes. It is generally supposed, indeed, that the spirit of salt alone will dissolve gold; but there seems to be an error in this, founded on the inaccuracy of the preparation of such spirit of salt; for Messrs. Geoffroy and Boulduc have at different times produced before the French Academy spirit of salt carefully prepared by themselves, which would not at all dissolve gold, not even with the assistance of heat: even such spirit of salt would, however, be made to dissolve gold, by mixing this impregnation with it; so that it has the power of dissolving gold in a great degree.

4. A leaf of silver being dissolved in spirit of nitre, and this impregnation of mortar added to the solution, the whole became turbid, and a precipitation happened, part of the matter being thrown to the bottom, and part remaining suspended in form of a white cloud, which kept its place without falling.

5. The impregnation being mixed in equal quantities with oil of vitriol formed a coagulum, and made a great effervescence, with copious red vapours, and a strong smell of aqua fortis; and these vapours appeared at any time, on stirring the mixture, for several days together. If a larger quantity of oil of vitriol be added to this coagulum, it all becomes fluid, but ferments violently; and finally, there will be a white matter precipitated to the bottom of the clear liquor; and if a leaf of gold be brought near this mixture, it will be dissolved even by the vapour which exhales from it. Spirit of nitre has no effect upon this mixture, either in its state of coagulum, or when reduced by more oil of vitriol into a clear liquor; but the volatile spirit of urine ferments violently, without the least heat with it.

6. Oil of tartar *per deliquium* being added to the impregnation, the liquors would not readily mix, but remained separate, the impregnation sinking to the bottom; but on stirring them thoroughly together, they finally were made to unite into a white substance like butter, with a strong urinous smell. If a small quantity of corrosive sublimate be added to this mixture, the urinous smell ceases; and if oil of vitriol be added, there is a violent fermentation occasioned; and, in fine, a large quantity of precipitate.

7. This impregnation of mortar being mixed with an equal quantity of a solution of corrosive sublimate, there is nothing remarkable produced, though the mixture be ever so much shaken; but if a little oil of tartar *per deliquium* be added to this, the mixture becomes turbid, and, on stirring all together for some time, it becomes white and thick like butter. If to this, more corrosive sublimate be added in solution, it becomes orange-coloured; and, on more stirring, this becomes again white; and finally gives a white precipitate at the bottom of a transparent liquor.

8. If, instead of oil of tartar, an equal quantity of lime-water be added, this in the same manner gives an urinous smell, and the whole difference is, that the mixture will not become thick with this, as it will with oil of tartar.

9. The impregnation of mortar produced the same coagulum in mixing with spirit of urine, that it did with oil of tartar *per deliquium*; but it made no coagulation with spirit of sal ammoniac with lime: the occasion of this difference is, that the spirit of urine contains a great deal of volatile salt, and the other but little. It is a common error to suppose



pose that the spirit of sal ammoniac, which is most pungent, contains the greatest quantity of salt; but this is not the case, for the spirit made with lime is much more pungent than that with salt of tartar, though the last is well known to contain a much larger portion of saline particles.

10. If a piece of paper or linen be wetted in this impregnation, and afterwards dried, it takes fire very violently, and sparkles with the same violence as if it was impregnated with saltpetre.

From these experiments it is abundantly proved, that the impregnation of mortar contains a large quantity of a saline and nitrous ammoniac salt; for a dissolution of sal ammoniac and spirit of nitre, mixed together, are found to produce all the changes in the different bodies before named, that the impregnation does. On the whole, though it has been supposed by Mr. Tournefort, and others, that mortar contained saltpetre, sea-salt, and a fixed alkali; yet there does not appear any proof of its containing any of these salts: no fixed alkali can ever be separated from the impregnation of it; and though the linen or paper, wetted in the impregnation of it, sparkled when on fire, yet it is not nitre, but merely a nitrous sal ammoniac, which occasions that phenomenon. The same effect is produced, if the linen or paper be wetted with a mixture of spirit of urine and spirit of nitre. And the several experiments before recited prove, that there is in mortar a spirit of nitre and a spirit of sea-salt, which, with the volatile urinous salts, form a nitrous or a saline ammoniac. Mem. Acad. Scienc. Par. 1734.

MORTAR, in *Chemistry*, &c. is an instrument very useful for the division of bodies, partly by percussion, and partly by grinding. They have the form of an inverted bell, and are made of all sizes and materials, as marble, copper, glass, iron, grit-stone, and agate. The matter intended to be pounded is to be put into them, and there struck and bruised by a long instrument called a *pestle*. This, when large and heavy, ought to be suspended by a cord, or chain, fixed to a moveable pole, placed horizontally above the mortar, which considerably relieves the operator, because its elasticity assists the raising of the pestle.

MORTAR, in the *Military Art*, a short piece of ordnance, thick and wide, proper for throwing bombs, carcasses, shells, stones, bags filled with grape shot, &c. The use of mortars is thought to be older than that of cannon: for they were employed in the wars of Italy, to throw balls of red-hot iron and stones, long before the invention of shells. It is generally believed that the Germans were the first inventors. See BOMB.

The method of throwing red-hot balls out of mortars was first put in practice at the siege of Stralsund in 1675, by the elector of Brandenburg; though some say, in 1653, at the siege of Bremen. For a further account of mortars, see CANNON.

MORTAR, *Coehorn*, a small kind of mortar, invented by the famous engineer baron Coehorn, to throw small shells or grenades. These mortars are commonly fixed, to the number of a dozen, to a block of oak, at the elevation of 45°. See CANNON.

MORTARS, *Fire-lock*, or *Bombards*, are small mortars, fixed at the end of a fire-lock: they are loaded as all common fire-locks are; and the grenade, placed in the mortar at the end of the barrel, is discharged by a flint lock; and to prevent the recoil from hurting the bombardier, the bombard rests on a kind of halberd made for that purpose. They were first invented by major-general Siebach, a German, about the year 1740.

MORTARS, *Hand*, were frequently used before the invention of coehorns. See CANNON.

MORTARS, *Land*. See CANNON.

MORTAR, *Partridge*. See CANNON.

MORTARS, *Sea*. See CANNON.

MORTARS, *Stone*. See CANNON.

MORTAR, *to charge*, or *load a*, the proper quantity of gunpowder is put into the chamber; and, if there be any vacant space, they fill it up with hay; some choose a wooden plug; over this they lay a turf, some a wooden tompon, fitted to the bore of the piece; and lastly the bomb, taking care that the fuse be in the axis thereof, and the orifice be turned from the muzzle of the piece; what space remains is to be filled up with hay, straw, turf, &c. so as the load may not be exploded without the utmost violence.

The quantity of gunpowder to be used, is found by dividing the weight of the bomb by 30: though this rule is not always to be strictly observed.

When the proper quantity of powder, necessary to charge a sea-mortar is put into the chamber, it is covered with a wad, well beat down with the rammer. After this the fixed shell is placed upon the wad, as near the middle of the mortar as possible, with the fuse-hole uppermost, and another wad pressed down close upon it, so as to keep the shell firm in its position. The officer then points the mortar, according to the proposed inclination.—When the mortar is thus fixed the fuse is opened; the priming-iron is also thrust into the touch-hole of the mortar to clear it, after which it is primed with the finest powder. This done, two of the matrosses, or sailors, taking each one of the matches, the first lights the fuse, and the other fires the mortar. The bomb, thrown out by the explosion of the powder, is carried to the place intended: and the fuse, which ought to be exhausted at the instant of the shell's falling, inflames the powder contained in it, and bursts the shell in splinters: which, flying off circularly, occasion incredible mischief wheresoever they reach.

If the service of mortars should render it necessary to use pound-shots, 200 of them, with a wooden bottom, are to be put into the 13-inch mortar, and a quantity of powder, not exceeding five pounds; and 100 of the above shot with 2½ pounds of powder, for the 10-inch mortar, or three pounds at most.

MORTAR, *to elevate the*, so as its axis may make any given angle with the horizon, they apply the artillery-level, or gunner's quadrant: the use whereof see under the articles LEVEL and QUADRANT.

An elevation of 70 or 80 degrees is what is commonly chosen for rendering mortars most serviceable in casting shells into towns, forts, &c. though the greatest range be at 45 degrees.

All the English mortars are fixed at an angle of 45 degrees, and lashed strongly with ropes at that elevation. Although, in a siege, there is only one case, in which shells should be thrown with an angle of 45 degrees; that is, when the battery is so far off that they cannot otherwise reach the works: for when shells are thrown out of the trenches into the works of a fortification, or from the town into the trenches, they should have as little elevation as possible, in order to roll along, and not bury themselves; whereby the damage they do, and the terror they occasion, are much greater than if they sink into the ground. On the contrary, when shells are thrown upon magazines, or any other buildings, with an intention to destroy them, the mortars should be elevated as high as possible, that the shells may acquire a greater force in their fall, and consequently do greater execution. If all mortar-pieces were, as they ought to be, exactly similar, and their requisites of powder as the cubes of the diameters of their several bores; and if their shells, bombs, carcasses, &c. were also similar; then, comparing like with like, their ranges on the plane of the horizon under the same degree of elevation would be equal; and consequently



quently one piece being well proved, *i. e.* the range of the grenado, bomb, carcase, &c. being found to any degree of elevation, the whole work of the mortar-piece would become very easy and exact.

But since mortars are not thus similar, it is required, that the range of the piece, at some known degree of elevation, be accurately found by measuring; and from hence all the other ranges may be determined.

Thus, to find the range of the piece at any other elevation required; say, as the sine of double the angle under which the experiment was made, is to the sine of double the angle proposed, so is the range known to the range required.

Suppose, for instance, it be found, that the range of a piece, elevated to  $30^\circ$ , is 2000 yards: to find the range of the same piece with the same charge, when elevated to  $45^\circ$ : take the sine of  $60^\circ$ , the double of  $30^\circ$ , and make it the first term of the rule of three; the second term must be the sine of  $90^\circ$ , the double of  $45^\circ$ ; and the third the given range 2000; the fourth term will be 2310, the range of the piece at  $45^\circ$ . If the elevation be greater than  $45^\circ$ , instead of doubling it, take the sine of double its complement to  $90^\circ$ . As suppose the elevation of a piece be  $50^\circ$ , take the sine of  $80^\circ$ , the double of  $40^\circ$ . Again, if a determined distance to which a shot is to be cast, is given, and the angle of elevation to produce that effect be required; the range known must be the first term in the rule of three, which suppose 2000 yards; the range proposed, which we suppose 1600 yards, the second term; and the sine of  $60^\circ$  double of the elevation for the range of 2000 yards, the third term. The fourth term will be found the sine of  $43^\circ 52'$ , whose half,  $21^\circ 56'$ , is the angle of the elevation the piece must have to produce the desired effect. And if  $21^\circ 56'$  be taken from  $90^\circ$ , you will have  $68^\circ 4'$  for the other elevation of the piece, with which the same effect will likewise be produced.

Note, to avoid the trouble of finding sines of double the angles of proposed elevations, Galileo and Torricelli give us the following table, in which the sines of the angles sought are had by inspection.

Degrees.	Degrees.	Ranges.	Degrees.	Degrees.	Ranges.
90	0	0	0	0	0
89	1	349	66	24	7431
88	2	698	65	25	7660
87	3	1045	64	26	7880
86	4	1392	63	27	8090
85	5	1736	62	28	8290
84	6	2709	61	29	8480
83	7	2419	60	30	8660
82	8	2556	59	31	8829
81	9	3090	58	32	8988
80	10	3420	57	33	9135
79	11	3746	56	34	9272
78	12	4067	55	35	9397
77	13	4384	54	36	9511
76	14	4695	53	37	9613
75	15	5000	52	38	9703
74	16	5209	51	39	9781
73	17	5592	50	40	9841
72	18	5870	49	41	9903
71	19	6157	48	42	9945
70	20	6428	47	43	9976
69	21	6691	46	44	9994
68	22	6947	45	45	10000
67	23	7193			

The use of the table is obvious. Suppose, for instance, it be known by experiment, that a mortar elevated  $15^\circ$ , charged with three pounds of powder, will throw a bomb to the distance of 350 fathom: and it be required, with the same charge, to throw a bomb 100 fathom farther: seek in the table the number answering to 15 degrees, and you will find it 5000. Then as 350 is to 450, so is 5000 to a fourth number, which is 6428. Find this number, or the nearest to it, in the table, and against it you will find  $20^\circ$ , or  $70^\circ$ ; the proper angles of elevation. See RANGE.

For the weight, dimensions, &c. of the bombs, &c. to be cast out of mortars, and the lines of their projection, see BOMB and PROJECTILE.

MORTARA, in *Geography*, a town of Italy, in the Lumelline, near which Didier, king of the Lombards, was defeated by Charlemagne; seven miles N. of Lumello.

MORTARIOLUM, a word applied by different writers to different things, from their resemblance to a mortar in shape. The chemists express by this name a small mould made for fashioning their copels; and anatomists call the sockets of the teeth, the *mortariola* of the jaws.

MORTE, in *Geography*, a lake of the county of Tyrol; 10 miles E. of Trent.

MORTE Point, a cape of England, on the W. coast of Devonshire, at the entrance of the Bristol channel. N. lat.  $51^\circ 10'$ . W. long.  $4^\circ 8'$ .

MORTEAU, a town of France, in the department of the Doubs, and chief place of a canton, in the district of Pontarlier; 12 miles S.E. of it. The place contains 1384, and the canton 6601 inhabitants, on a territory of 200 kilometres, in seven communes.

MORTELLARI, MICHELI, in *Biography*, a Neapolitan composer, and excellent fingering-master, came from Italy to England with the earl and countess of Spencer in 1780, and immediately had offers of numerous pupils in the first families in the kingdom. He had composed several operas before he left Italy: as "Le Asturie Amoroſe," in 1775; "Erio," in 1776; "Don Salterio Civetto;" "Il Barere di Lago nero," 1778; "Alessandro nell' Indie." His style, though very agreeable and in good taste, never reached the grand or sublime; but his single airs and cantatas abound in grace and elegance of a particular kind: there is so much facility in them, and they seem so natural, that it is difficult to imagine the melodies to be new; however, he is guilty of no common plagiarism; for upon examination, we can only find, that he has robbed nature in sentimental expression.

He composed in England the opera of "Armida," jointly with Grefnich, in 1786, for Rubinelli and the Mara. Indeed all the music of this drama, except Mara's songs, were furnished by Mortellari, who had been a disciple of Piccini; but though of the Neapolitan school, his compositions are less bold, nervous, and spirited, than elegant, graceful, and pleasing; but being by birth Palermitano, his strains may perhaps be more properly called Sicilian than Neapolitan.

When he quitted England, where, by great labour and economy, he had accumulated a considerable sum of money, which he lent to a Venetian nobleman, who dying before the writings were properly executed, we fear the money, which he had hastily advanced, was never refunded by the executors of his noble friend.

After this melancholy event he went into Russia, whence we have not heard of his return.

MORTER, or MORTARA, perhaps the *Colentum* of Pliny, in *Geography*, an island of the Adriatic, near the coast of Dalmatia, three miles beyond the rock Steffano, 13 miles



miles in circuit, delightfully situated, fufceptible of cultivation, but thinly inhabited. It has a good harbour, and a town in an agreeable valley. Its marble is full of marine fubftances; the foil is various; and the ftrait by which it is feparated from the continent is narrow and dangerous. Its inhabitants are addicted to fmuggling and piracy. Not far from Morter, on the continent, is "Vodizza," a village noted for its cherries, from which a delicious liquor, called Marafquin, is extracted. N. lat. 43° 57'. E. long. 15° 44'.

MORTERE, in *English Antiquity*, a *mortarium*, a light or taper fet in churches, to burn over the graves or fhines of the dead.

MORTERO, in *Geography*, a fmall ifland of the Mediterranean, near the coaft of Sardinia. N. lat. 41° 8'. E. long. 9° 45'.

MORTGAGE, in *Law*, an obligation, whereby lands or tenements of a debtor are pawned or bound over to the creditor for money, or other effects, borrowed; peremptorily to be the creditor's for ever, if the money be not repaid at the day agreed on.

In this fenfe, mortgage, in the common law, amounts to much the fame with hypotheca, in the civil law.

The creditor holding fuch land on fuch agreement, is in the mean time called *tenant in mortgage*. He, who lays the pawn or gage, is called the *mortgager*; and he that takes it, the *mortgagee*. If a mortgage includes exceffive ufury, it is prohibited by the ftatute 37 Hen. VIII.

The French fometimes ufe the word mortgage in the fame fenfe in their language, where it ftands in contradiftinction to a fimple contract, which does not carry with it the mean profits, and which they call *vif-gage*, *life-pledge*.

Granville defines mortgage, *mortuum vadum*, to be that *cujus fructus vel redditus interim percepti in nullo fe acquitant*. Thus, it is called mortgage, *i. e.* *dead gage*, of *mort*, *death*, and *gage*, *pledge*; becaufe whatever profit it yields, yet it redeems not itfelf by yielding fuch profit, except the whole fum borrowed be likewise paid at the day; the mortgager being by covenant to receive the profits till default of payment. Others hold it called mortgage, becaufe, if the money be not paid at the day, the land, *moritur*, *dies*, to the debtor, and is forfeited to the creditor.

Thus, if a man borrows of another a fpecific fum (*e. g.* 200*l.*) and grants him an eftate in fee, on condition that if he, the mortgager, fhall repay the mortgagee the faid fum of 200*l.* on a certain day, mentioned in the deed, that then the mortgager may re-enter on the eftate fo granted in pledge; or, as is now the more ufual way, that the mortgagee fhall reconvey the eftate to the mortgager; in this cafe, the land, which is fo put in pledge, is by law, in cafe of non-payment at the time limited, for ever dead and gone from the mortgager; and the mortgagee's eftate in the lands is then no longer conditional, but abfolute. But as it was formerly a doubt (Litt. § 357. Cro. Car. 191.), whether by taking fuch eftate in fee, it did not become liable to the wife's dower, and other incumbrances of the mortgage, (though that doubt has been long ago over-ruled by our courts of equity, Hard. 466.) it, therefore, became ufual to grant only a long term of years, by way of mortgage; with condition to be void on repayment of the mortgage-money: which courfe has been fince pretty generally continued, principally becaufe, on the death of the mortgagee, fuch term becomes vefted in his perfonal representatives, who alone are intitled in equity to receive the money lent, of whatever nature the mortgage may happen to be. As foon as the eftate is created, the mortgagee may immediately

enter on the lands; but is liable to be difpoffeffed, upon performance of the condition by payment of the mortgage-money at the day limited. And, therefore, the ufual way is to agree, that the mortgager fhall hold the land till the day affigned for payment; when, in cafe of failure, whereby the eftate becomes abfolute, the mortgagee may enter upon it and take poffeffion, without any poffibility, at law, of being afterwards evicted by the mortgager, to whom the land is now for ever dead. But here again the courts of equity interpoze: and, though a mortgage be thus forfeited, and the eftate abfolutely vefted in the mortgagee, at the common law, yet they will confider the real value of the tenements compared with the fum borrowed. And, if the eftate be of greater value than the fum lent thereon, they will allow the mortgager at any reasonable time to recal or redeem his eftate; paying to the mortgagee his principal, intereft, and expences: for, otherwife, in ftrictnefs of law, an eftate worth 1000*l.* might be forfeited for non-payment of 100*l.* or a lefs fum. This reasonable advantage, allowed to mortgagers, is called the equity of redemption. And this enables a mortgager to call on the mortgagee, who has poffeffion of his eftate, to deliver it back and account for the rents and profits received, on payment of his whole debt and intereft; thereby turning the *mortuum* into a kind of *vivum vadum*. But, on the other hand, the mortgagee may either compel the fale of the eftate, in order to get the whole of his money immediately, or elfe call upon the mortgager to redeem his eftate prefently, or in default thereof to be for ever foreclofed from redeeming the fame, *i. e.* to lofe his equity of redemption without poffibility of recal. And alfo in fome cafes of fraudulent mortgages, fpecified in 4 & 5 W. & M. cap. 16. the fraudulent mortgager forfeits all equity of redemption whatfoever. It is not, however, ufual for mortgagees to take poffeffion of the mortgaged eftate, unlefs where the fecurity is precarious or fmall; or where the mortgager neglects even the payment of intereft. When the mortgagee is frequently obliged to bring an ejectment, and take the land into his own hands, it is in the nature of a pledge, or the *pignus* of the Roman law: whereas, while it remains in the hands of the mortgager, it more refembles their hypotheca, which was, where the poffeffion of the thing pledged remained with the debtor. But, by 7 Geo. II. cap. 20. after payment or tender by the mortgager of principal, intereft, and cofts, the mortgagee can obtain no ejectment; but may be compelled to re-affign his fecurities. Blackft. Com. book ii. cap. 10.

The civil lawyers diftinguifh 26 different kinds of *tacit* mortgages.

MORTIER, a badge or enfigh of dignity, borne by the chancellors and great prefidents of the parliaments of Paris. That borne by the chancellor was a piece of cloth of gold, lined and turned up with ermin; that of the firft prefident was a piece of velvet edged with a gold lace; that of the other prefidents was only a piece of gold lace.

They formerly bore it on their head, but afterwards in their hands; except in grand ceremonies, as at the entry of a king. Hence the denomination, *prefidents à mortier*. See CAP.

MORTIER Bank, in *Geography*, a fifhing bank near the coaft of Newfoundland. N. lat. 47° 5'. W. long. 54° 48'.

MORTIFICATION, in *Surgery*, the death of a part of the body. This fubject has been fo fully treated of in another volume of the prefent work, that it only feems neceffary here to make a reference to the article GAN-GRENE.



**MORTIFICATION**, in *Religion*, any severe penance observed on any religious account. How ancient and how universal the practice of it has been, and for what reasons observed, see **FAST**.

**MORTIMER**, JOHN HAMILTON, in *Biography*, was born at East-Bourne in Suffex, and very early in life exhibited a decided taste and talent for painting. He was therefore placed by his parents with Hudson, but did not stay long with him, nor with Pine, to whom he afterwards went to acquire the rudiments of art. He felt that he had talents, and probably chose to take his own course in the direction of them. He accordingly went to draw from the antique in the gallery which the duke of Richmond munificently opened to artists in Privy Gardens, and afterwards was admitted a member of the academy in St. Martin's-lane. By his studies in these schools he acquired a considerable degree of knowledge of the human figure, but never enjoyed a feeling of the grand style.

Mortimer, endowed with the faculty of invention, did not allow it to lie unproductive in his mind, but composed a great variety of designs; which unfortunately he executed with too much facility, and was too easily satisfied with his labours, to carry them very far in the road to perfection. At the age of 22 he bore away the prize given by the Society for the Encouragement of Arts, &c. and gained great and merited applause for his performance, which, considering his youth, was at that time an uncommon one. The subject was St. Paul preaching to the Britons, and it is now the altar-piece of the church at High-Wycombe. His favourite subjects were of the grotesque or horrible kind; incantations, monsters, or representations of banditti and soldiers in violent actions. The attempts at real character which he made (and of which he has left us etchings) from some of Shakspeare's most celebrated heroes, are weak and untrue; they leave us nothing to regret in his not having indulged himself in more of the like kind, except for the freedom with which they are executed. They were very highly extolled in his time, but the improvement in art and taste which the country has since experienced has given us more accurate ideas of art, and more just discrimination between character and caricature.

He sometimes was stimulated to paint portraits, but was by no means successful. He had no eye to colour, and had too much vivacity of imagination, or rather, perhaps, too little steadiness of mind in the pursuit to dwell sufficiently long on matter so uninteresting as portraiture, when compared with the zeal and enthusiasm excited by historical painting.

He possessed great personal activity, and was fond of athletic exercises, but unfortunately devoted too much time to habits of excess in pleasurable indulgences, which brought on premature decline and death in the 39th year of his age, in 1779.

The character which Mortimer left behind him, excepting the weakness of allowing the heat of youthful passions to overcome and mislead him for a time, was highly estimable. He was generous and friendly, lively, engaging, and intellectual. Having once become aware of the folly of vicious indulgence, he determined to adopt a more correct course of life, but unfortunately his good resolutions were excited too late, and the heavy hand of death fell on him before he or his friends were benefited by them; as far at least as relates to the art he professed.

**MORTINSBERG**, in *Geography*, a town of Austria; 10 miles S.S.W. of Zwettl.

**MORTIS**, *Causa Donatio*. See **DONATION**.

**MORTISE**, or **MORTICE**, in *Carpentry and Joinery*, an

excavation recessed within the surface of a piece of timber, to receive the projection on the end of another piece, in order to fix the two pieces together at a given angle. The sides of the mortise are generally four planes at right angles to each other, and to the surface whence the excavation is made. See **CARPENTRY** and **JOINERY**.

The word is originally French, *mortoise*, which signifies the same; and which Borel farther derives from *mordre*, to bite.

**MORTLAKE**, in *Geography*, a village and parish in the western division of the hundred of Brixton, in the county of Surrey, England, is situated on the southern bank of the river Thames, at the distance of seven miles S.W. from London. The manor here at the time of the conquest, and from that period till the reign of Henry VIII., was the property of the archbishop of Canterbury, who occasionally resided at the manor-house. Archbishop Anselm celebrated the feast of Whitsuntide in that mansion in the year 1099; and archbishops Peckham and Reynolds died there; the former A. D. 1292, and the latter in 1327. After the alienation of the manor, by archbishop Cranmer, the king gave it to his newly erected dean and chapter of Worcester; at which time the manor-house was destroyed, and the manorial residence removed to Wimbledon.

This village is remarkable in the history of English manufacture, as the seat of the first manufactory of fine tapestry established in the British dominions. The buildings of this manufactory, which owed its origin to the patriotic exertions of sir Francis Crane, formerly occupied the site of Queen's-head court. They are now wholly demolished, but the house, built for the residence of Mr. Francis Cleyne, the chief designer employed in the work, still continues standing on the opposite side of the road. A manufactory of delf, begun about seventy years ago by Mr. William Saunders, is now carried on by Wagstaff and Coy. There is, besides, in this village a small manufactory of white stone-ware, the property of Mr. Joseph Kishire. The alms-houses here were first founded and endowed in 1628 by John Juxon, esq. and his family, but the endowments were subsequently much augmented by Mrs. Elizabeth Heneage. The persons maintained in these houses are poor widows, each of whom receives 2s. 6d. per week; and clothes at stated periods. A charity-school, which owes its foundation to a bequest by lady Capel, is now in a very flourishing condition; the funds having been so much increased of late by various donations, as to enable the trustees to clothe and educate in it 12 boys and 12 girls.

Mortlake church appears, from a record still extant, to have been originally erected about the year 1348, but no portion of that building now remains, except the outward door of the belfry. The other parts were rebuilt in 1543; and the south aisle again, even so late as the year 1725. This church is constructed of flint and stone chequered, and has a square embattled tower of similar workmanship at the west end. The interior is adorned with a very handsome front, which exhibits some rich tracery work; and bears among other decorations the arms of archbishop Bourchier, who bestowed it on the church in the time of Henry VI. Here are likewise, as well as in the church-yard, a number of neat monuments, some of them in honour of distinguished public characters. Among these is one for Dr. Dec, who was remarkable in the reign of queen Elizabeth for his skill in the occult sciences; and of whom, as well as of his son, some account will be found in a preceding volume. (See **DEE**.) Another monumental memorial commemorates John Partridge, a celebrated physician and astrologer, who lived in the seventeenth century; a third for sir John



Barnard, alderman of London, within the same period, together with the late sir Brook Watson, are chiefly worthy of mention. The living here was at one time a rectory in the peculiar jurisdiction of the archbishop of Canterbury, but it is now a perpetual curacy, with a reserved salary of 40*l.* per annum, paid out of the great tithes by the lessee under the dean and chapter of Worcester, who have the nomination of the curate. Mr. Parkes, curate here during the protectorship of Cromwell, was one of the ministers appointed to assist the committee for displacing ignorant and insufficient ministers and school-masters. An ancient house here is said to have been for some time the residence of that usurper.

The parish of Mortlake contains about 1400 acres, of which nearly 650 are inclosed in Richmond park. Upwards of 100 acres are waste lands. Of the remainder, 230 acres constitute garden ground, including 31 acres cropped with asparagus, and 10 with lavender. The cultivation of the former of these plants has much decreased here within the last 20 years. At the extremity of the parish, towards Richmond, is a farm consisting of about 80 acres, which has been long in the occupation of his majesty, and is said to be one of the best cultivated spots in England. The soil here consists mostly of sand and gravel, but on some spots near the side of the river there is a considerable mixture of clay. On a small hill within the park stands an elegant edifice called the Stone lodge, which was begun by George I. after a design by the earl of Pembroke, but left in an unfinished state till completed by the princess Amelia, when she became ranger of the park. This lodge was given, in 1803, to lord viscount Sidmouth, in whose possession it still continues. In this parish is the pleasant hamlet of East Sheen, which commands some very beautiful views, from its position on an eminence close to the Thames. Some highly poetical passages in Maurice's Poem of "Richmond," are allusive to the scenery, history, &c. of Mortlake, Sheen, and the vicinity.

Mortlake, according to the parliamentary returns of 1801, contains 341 houses, and 1748 inhabitants. The Environs of London, by the Rev. Daniel Lysons, 4 vols. 4to. 1811. Manning and Ray's History and Antiquities of Surrey, folio.

**MORTLICH**, or **MURTHLECH**, a village of Scotland, in the county of Bamf, on a small river which runs into the Spey; once the see of a bishop, founded by Malcolm II. in the year 1010 in commemoration of a great victory obtained by him over the Danes; the see, after continuing 127 years, was removed to Aberdeen by king David I.; 12 miles S.S.W. of Fochabers.

**MORTMAIN**, in *Law*, the alienation of lands and tenements to any guild, corporation, or fraternity, sole or aggregate, ecclesiastical or temporal, and their successors; as bishops, parsons, vicars, &c. which may not be done without the king's licence, and that of the lord of the manor; or that of the king alone, if it be immediately holden of him. (Stat. 7 & 8 W. III. cap. 37.) And by stat. 9 Geo. II. cap. 36. no manors, lands, or money to be laid out in lands, are to be given for charitable uses, unless by deed executed twelve months before the death of the donor.

The word literally denotes *dead-hand*; being a compound of *mort*, *dead*, and *main*, *hand*. Accordingly Hottoman defines mortmain to be the possession of those who are, as it were, immortal, because they never cease to have heirs; so that the estate never reverts to its first lord: *main*, *hand*, being used for possession; and *mort*, *dead*, by antiphrasis, for immortal. Others assign the reason of the name thus: that the services and other profits due for such lands, should

not, without such licence, come into a dead-hand (*mainmort*) *i. e.* into a hand as it were dead, that is, so dedicated to God, or pious uses, as to be different from other lands, tenements, or hereditaments, and never to revert to the donor, or any temporal or common use.

Purchases in mortmain were usually made by ecclesiastical bodies, the members of which (being professed) were reckoned dead persons in law; and, therefore, the land holden by them might, with great propriety, be said to be held in *mortu manu*. See **AMORTIZATION**.

In order to understand the rise and progress of the statute of mortmain, it is necessary to observe, that by the common law, any man might dispose of his lands to any other private man, at his own discretion, especially when the feudal restraints of alienation were worn away. Yet in consequence of these, it was always, and is still, necessary (F. N. B. 121.) for corporations to have a licence in mortmain from the crown, to enable them to purchase lands; and such licences of mortmain seem to have been necessary among the Saxons, above sixty years before the Norman conquest. But, besides this general licence from the king, as lord paramount of the kingdom, it was also requisite, whenever there was a mesne, or intermediate lord between the king and the alienor, to obtain his licence also, upon the same feudal principles, for the alienation of the specific land. And if no such licence was obtained, the king, or other lord, might respectively enter on the lands so aliened in mortmain as a forfeiture.

However, such were the influence and ingenuity of the clergy, that, notwithstanding this fundamental principle, the largest, and most considerable donations of religious houses happened within less than two centuries after the conquest: and they formed contrivances for evading the necessity of obtaining licences. In process of time it was observed, that the feudal services, ordained for the defence of the kingdom, were every day visibly withdrawn; that the circulation of landed property from man to man began to stagnate; and that the lords were curtailed of the fruits of their feignories, their escheats, wardships, reliefs, and the like: and, therefore, in order to prevent this, it was ordained by the second of king Henry III's. great charters, A. D. 1217, cap. 43. ed. Oxon. and afterwards by that printed in our common statute books, that all such attempts should be void, and the land forfeited to the lord of the fee. (Mag. Char. 9 Hen. III. cap. 36.) This was afterwards succeeded by the statute *de religiosis*, 7 Edw. I. which provided that no person, religious or other whatsoever, should buy or sell, or receive under pretence of a gift, or term of years, or any other title whatsoever, nor should by any act or ingenuity appropriate to himself, any lands or tenements in mortmain; upon pain that the immediate lord of the fee, or, on his default for one year, the lords paramount, and, in default of all of them, the king might enter thereon as a forfeiture.

Farther, the statute of Westminster the second, 13 Edw. I. cap. 32, enacted, that in cases now known under the name of common recoveries, a jury should try the true right of the demandants or plaintiffs to the land; and if a religious house or corporation be found to have it, they should still recover feisin; otherwise it should be forfeited to the immediate lord of the fee, or else to the next lord, and finally to the king, upon the immediate or other lord's default. And to prevent any future evasion, when the statute of *quia emptores*, 18 Edw. I. abolished all subinfeudations, and gave liberty for all men to alienate their lands to be holden of the next immediate lord, a proviso was inserted, cap. 3. that this should not extend to authorize any kind of alienation in mortmain.



mortmain. And when afterwards the method of obtaining the king's licence, by writ of *ad quod damnum*, was marked out by 27 Edw. I. stat. 2, it was farther provided by 34 Edw. I. stat. 3, that no such licence should be effectual, without the consent of the mesue, or intermediate lords. It was afterwards enacted by 15 Ric. II. cap. 5, that lands which had been purchased to uses, (another method of evasion, to which ecclesiastical ingenuity recurred,) should be amortised by licence from the crown, or else be sold to private persons; and that, for the future, uses should be subject to the statutes of mortmain, and forfeitable like the lands themselves; and large tracts of land adjoining to churches, and consecrated by the name of church-yards, were declared to be within the compass of the statutes of mortmain. And civil or lay corporations, as well as ecclesiastical, are also declared to be within the mischief, and the remedy provided by those salutary laws. Moreover it was declared, by 23 Hen. VIII. cap. 10, that all grants of lands to superstitious uses, such as obits, chantries, &c. if granted for any longer term than twenty years, should be void. However, during all this time, it was in the power of the crown, by granting a licence of mortmain, to remit the forfeiture, so far as related to its own rights; and to enable any spiritual or other corporation to purchase and hold any lands or tenements in perpetuity: which prerogative is declared and confirmed by 18 Edw. III. stat. 3. cap. 3. And it was farther provided, by 7 & 8 W. III. cap. 37, that the crown, for the future, at its own discretion, may grant licences to alien or take in mortmain, of whomsoever the tenements may be holden.

The statutes of mortmain were suspended for twenty years by 1 & 2 P. & M. cap. 8, and during that time, any lands or tenements were allowed to be granted to any spiritual corporation, without any licence whatsoever. And, for the augmentation of poor livings, it was enacted by 17 Car. II. cap. 3, that appropriators may annex the great tithes to the vicarages, and that all benefices under 100*l.* *per annum* may be augmented by the purchase of lands, without licence of mortmain in either case; and the like provision hath been since made in favour of the governors of queen Anne's bounty, 2 & 3 Anne, cap. 11. It hath also been held, that, notwithstanding the statute 23 Hen. VIII., a man may give lands for the maintenance of a school, an hospital, or any other charitable uses. But as it was apprehended from recent experience, that persons on their deathbeds might make large and improvident dispositions, even for these good purposes, and defeat the political ends of the statutes of mortmain; it is therefore enacted, by 9 Geo. II. cap. 36, that no lands or tenements, or money to be laid out thereon, shall be given for, or charged with any charitable uses whatsoever, unless by deed indented, executed in the presence of two witnesses, twelve calendar months before the death of the donor, and enrolled in the court of chancery within six months after its execution, (except stocks in the public funds, which may be transferred within six months previous to the donor's death,) and unless such gift be made to take place immediately, and be without power of revocation; and that all other gifts shall be void. The two universities, their colleges, and the scholars upon the foundation of the colleges at Eton, Winchester, and Westminster, are excepted out of this act. It hath been determined, that if a man deviseth his land to trustees, "to be turned into money, and that money laid out in a charity," it is not good within the last cited act; for it is an interest arising out of land. So a devise of a "mortgage," or of a "term for years," to a charity, is not good; for the words of the statute are, that the lands shall not be "conveyed or settled,

for any estate or interest whatsoever, or any ways charged or incumbered, in trust or for the benefit of any charitable use." So also, "money given to be laid out in lands," is expressly within the act; but money given generally is not; and if money be given to be laid out "in lands or otherwise," to a charitable use, it hath been determined that such devise is good, by reason of the words "or otherwise." By 43 Geo. III. c. 108. persons may give, by deed enrolled in such manner, and within such time as is directed in England by 27 Hen. VIII., or bequeath by will or testament, duly executed at least three calendar months before their death, to any person or persons, or body politic or corporate, and their heirs and successors, land, not exceeding five acres, or chattels, not exceeding in value 500*l.*, for or towards the erecting, repairing, purchasing, or providing any church or chapel, where the liturgy and rites of the said church are or shall be used or observed, or any mansion-house for the residence of any minister of the said united church, officiating, or to officiate in any such church or chapel, &c. &c. Blackitt. Com. book ii. chap. 18. See Mr. Highmore's Hist. of Mortmain.

MORTO, or MORTU Island, called also *St. Clara*, in *Geography*, an island in the Atlantic, near the coast of Peru, about 2 miles in length, and 5 leagues N.N.E. from the river Tumbaz.

MORTON, RICHARD, in *Biography*, an eminent physician, was born in the county of Suffolk; and, after taking the degree of bachelor of arts in the university of Oxford, was for some time chaplain in the family of Foley, in Worcestershire. Having, however, adopted the principles of the non-conformists, he was under the necessity, from the intolerance of the times, in the reign of Charles II., to abandon the profession of theology, and adopted that of medicine. He accordingly was admitted to the degree of doctor in this faculty in 1670, having in that year accompanied the prince of Orange to Oxford, as physician to his person. He afterwards settled in London, became a fellow of the College of Physicians, and obtained a large share of city practice. He died at his house in Surrey, in 1698. The works of Dr. Morton have claimed a considerable share of reputation, and bear testimony to some acuteness of observation and activity of practice. They abounded, however, with the errors of the humoral pathology, which was prevalent in that age; and sanctioned a method of treatment in acute diseases, which his more able contemporary, Sydenham, discountenanced, and which subsequent experience has generally discarded. His first publication was entitled "*Phthilogia, seu Exercitationes de Phthisi*," 8vo. 1689, and was translated into English in 1694. It contains an attempt to arrange the varieties of consumption; but the distinctions, both in the classification and the indications of cure, are complicated and obscure. His "*Pyretologia, seu Exercitationes de Morbis universalibus acutis*," consisting of two volumes, octavo, was published at an interval of three years; the first volume in 1691, and the second in 1694. It was in this work that his humoral doctrines of fermentation and the agitations of the animal spirits were particularly dwelt upon; and the practice to which they led him was an unusual extension of the cordial and stimulant treatment of all fevers, and a more general introduction of the Peruvian bark, by which he probably contributed to prolong the reign of that prejudicial system of practice, in spite of the authority of Sydenham in favour of the cool treatment. His works have been printed collectively at Amsterdam, Geneva, Leyden, Venice, and Lyons. Eloy Dict. Hist. de la Med.

MORTON, JOHN, an English prelate and statesman, was  
6 a native



a native of Dorchester, and became so eminent for his skill in jurisprudence, as to become one of the privy-counsellors to Henry VI. and Edward IV. He attained to the highest rank in the church, being first bishop of Ely, from whence he was translated to Canterbury. In the reign of Henry VII. he was appointed chancellor of England; and so great was the friendship of his sovereign for Morton, that he obtained for him a cardinalship. He died in the year 1500.

MORTON, JAMES, *Earl of*, regent of Scotland, was born at Dalkeith in 1530, and educated under the famous Buchanan at Paris. He returned to Scotland in 1554, and greatly promoted the reformation; but being accused of a concern in the murder of lord Darnley, he fled to England. He was afterwards made chancellor of Scotland, and, in 1574, succeeded the earl of Mar as regent; which office he resigned in 1579. He was condemned for high treason in 1581, and, what is remarkable, was beheaded by a machine, the model of which he had seen in England. It was called the *Maiden*, and resembled the guillotine, since so much and so infamously used in France. Morton was the first and last who suffered by it in Scotland. Robertson's *Hist. of Scotland*.

MORTON, THOMAS, an eminent bishop of the church of England, was born at York in the year 1564. Having obtained the rudiments of a good education at his native place, and at Halifax, he was sent, in 1582, to St. John's college, in the university of Cambridge. In the usual course he took his degrees of B.A. and M.A.; and in 1592 he offered himself as a candidate for a fellowship of his college, and proved successful against several competitors, solely on the ground of his superior merit. About the same time he was chosen logical lecturer to the university. While the plague raged at York, he preached and administered spiritual comfort to the wretched people. He himself carried with him medicines, and provisions, in large quantities, for their relief; not suffering a servant to attend him, choosing alone to run the risk of such a dangerous intercourse. In 1603 he attended lord Eure, ambassador to the emperor of Germany, as chaplain; and upon his return, he became domestic chaplain to the earl of Rutland; and in 1606, proceeded doctor of divinity at Cambridge. About this time he was appointed chaplain in ordinary to James I., and was presented by his majesty with the deanery of Gloucester, which he soon exchanged for the deanery of Winchester. In 1616 he was raised to the episcopal bench, by being nominated to the bishopric of Chester, whence he was translated to Lichfield and Coventry in 1618, and in 1632 to the rich see of Durham, in which he conducted himself with great moderation and equity, till he was involved in the ruin of the church of England during the civil wars. His personal sufferings at this time were very great: he was attacked by the mob, on account of his being a bishop; his property was confiscated, and he himself thrown into prison. He died, at the great age of 95, in the year 1659. He was author of several books in practical divinity. But he is chiefly known, as having by the advice, or rather the command, of Charles I. drawn up the declaration, known under the title of "The Book of Sports," the object of which was the authorizing the practice of certain recreations on Sundays, after the hours of divine service. One of the most remarkable circumstances that occurred during the bishop's continuance in the see of Lichfield, was his detesting the boy of Billton, in Staffordshire, who pretended to be possessed with a devil, and by this means was made the instrument of the forgeries of the Jesuits and priests, in propagating their superstitious, of which an account is given in many of our

histories, and in the *Biographia Britannica*. See also Neal's *Hist. of the Puritans*.

MORTON *Bay*, in *Geography*, a bay on the north-west coast of the island of Nevis, near the Narrows, or channel between that island and St. Christopher's; 2 miles N. of Charlestown.

MORTORP, a town of Sweden, in the province of Smaland; 10 miles W.S.W. of Calmar.

MORTREE, a town of France, in the department of the Orne, and chief place of a canton, in the district of Argentan; 7 miles S.S.E. of Argentan. The place contains 975, and the canton 7425 inhabitants, on a territory of 185 kilometres, in 15 communes.

MORTUARY is a gift left by a man at his death to his parish church, for a recompence of personal tithes and offerings, not duly paid in his life-time.

Mortuary is also the fee paid to an incumbent, for carrying a corpse out of his parish to be buried in another.

A mortuary is not properly and originally due to an incumbent from any but those of his own parish; but, by custom, in some places of the kingdom, it is paid to the parsons of other parishes, as the corpse passes through them.

Mortuaries seem originally to have been, like lay heriots, only a voluntary bequest to the church, and the mortuary was anciently brought to the church with the corpse, when it came to be buried, and called a *corse present*: but so early as the time of Hen. III., it was rivetted into an established custom; insomuch that the bequests of heriots and mortuaries were held to be necessary ingredients in every testament of chattels; insomuch that the lord must have the best goods left him as an heriot, and the church the second best as a mortuary. But this custom was different in different places.

Mortuaries are taken away, under certain conditions and limitations, in Wales, Berwick, and Chester, by 21 Hen. VIII. cap. 6. sect. 6. 12 Anne, stat. 2. cap. 6. 28 Geo. II. cap. 6.

It is enacted by 21 Hen. VIII. cap. 6. that all mortuaries or corse presents to parsons of any parish shall be taken in the following manner, unless where by custom less or none at all is due: *viz.* for every person who does not leave goods to the value of ten marks, nothing; for every person who leaves goods to the value of ten marks, and under 30*l.*, 3*s.* 4*d.*; if above 30*l.* and under 40*l.*, 6*s.* 8*d.*; if above 40*l.*, of what value soever they be, 10*s.*, and no more. And no mortuary shall, throughout the kingdom, be paid for the death of any feme-covert; nor for any child; nor for any one of full age that is not a house-keeper; nor for any way-faring man; but such way-faring man's mortuary shall be paid in the parish to which he belongs. And upon this statute stands the law of mortuaries to this day.

MORTUGARA, in *Geography*, a town of Brasil, in the government of Para; 20 miles S.W. of Para.

MORTUUM CAPUT. See CAPUT.

MORTY, in *Geography*, an island in the North Pacific ocean, about 60 miles in length from north to south, and from 10 to 25 in breadth; separated from the north-east part of the island of Gilolo by a channel about 25 miles wide, called the "Strait of Morty;" belonging to the sultan of Ternate. N. lat. 2° 15'. E. long. 128° 23'.

MORVEE, a town of Guzerat; 40 miles N.E. of Noanagur.

MORVEN, a district of Scotland, in the county of Argyle, extending in length about 20 miles along the sound of



of Mull, and 10 at its greatest breadth. This is the country of Fingal and his heroes.

MORUGO, a small river of Surinam, which runs into the sea, north of Essequibo.

MORVIEDRO, or MURVIEDRO, a town of Spain, in the province of Valencia, supposed to be erected on the ruins of the ancient *Saguntum*, founded about 200 years before the Trojan war by a colony of Grecians, and destroyed by Hannibal, is a long and narrow town, a league from the sea, at the foot of a mountain of black marble veined with white. The name of Murviedro is said to be derived from "Muri veteres," or "Muros viejos," from its supposed site. This town is surrounded by lofty walls, and flanked by small round towers. Its enclosure has several gates, defended by square towers. The streets are narrow, crooked, and deep, and the houses exhibit a bad appearance. The suburbs are extensive, more agreeable and airy than the town, and perfectly level. The inhabitants amount to about 5000. It has one parish church, three chapels of ease, two convents of monks, a convent of nuns, and a corregidor. Its commerce partly consists in brandy, which is exported to the north of Europe and to America: but its more certain resource is the production of the neighbouring lands in oil, wine, wheat, barley, hemp, and carobs. It abounds with vestiges of antiquity, which remind the passing observer of its original inhabitants, of its victors the Carthaginians, and of its possessors the Romans. Several Celtiberian and Roman inscriptions are seen; but of the numerous statues that ornamented the temples and other public edifices of Saguntum, one only remains, of white marble without a head, and a fragment of another. The traces of the walls of its circus are still discernible: but its mosaic pavement is destroyed. A greater portion of the theatre remains than of any other Roman monument; 13 miles N.N.E. of Valencia. N. lat.  $39^{\circ} 38'$ . W. long.  $0^{\circ} 22'$ .—A river of the same name runs into the sea, a little below the town.

MORVILLE, a small island in the English channel, near the coast of France. N. lat.  $48^{\circ} 50'$ . W. long.  $3^{\circ} 28'$ .

MORUM, in *Surgery*, an excrescence on the surface of the skin, so called from its supposed resemblance to a mulberry.

MORUMGANI, in *Geography*, a sea-port on the W. coast of Madagascar. S. lat.  $15^{\circ}$ .

MORUNDA, in *Ancient Geography*, a town of Asia, in Media, placed by Ptolemy between Larassa and Tigrana.—Also, a town of Asia, in Atropatene, situated on the northern part of the lake Spauta.—Also, a town of India, on this side of the Ganges, inhabited by the people called by Ptolemy Aii.

MORUNG, in *Geography*, a country of Asia, dependent on Thibet, either as tributary or feudatory, situated on the banks of the Cofa, N. of Bengal, and S.W. of Bootan.

MORUNGA. See MOHRUNGEN.

MORUP, a town of Sweden, in the province of Halland; 25 miles N.N.W. of Helsing.

MORUS, in *Botany*, the Mulberry, one of those ancient and universal names, whose etymology can only be guessed. The tree is called *μωρτα*, the fruit *μωρον*, by the Greeks; whence the Latin *Morus* for the former, and *Morum* for the latter, have evidently originated. Lexicographers have supposed these words to have originated, either from *μωρον*, dark, alluding to the colour of the fruit, which every body knows became so in consequence of the adventures of Pyramus and Thisbe; or, by antiphrasis, from *μωρος*, foolish, the Mulberry being esteemed the wisest

of trees, as never putting forth its buds till all the cold weather is certainly past. Pity that its wisdom is not communicable!—Linn. Gen. 487. Schreb. 634. Willd. Sp. Pl. v. 4. 368. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 342. Juss. 402. Tourn. t. 362. Lamarck Illustr. t. 762. Gærtn. t. 126.—Class and order, *Monoclea Tetrandria*. Nat. Ord. *Scabrida*, Linn. *Urtica*, Juss.

Gen. Ch. Male, *Cal.* Perianth in four deep, ovate, concave segments. *Cor.* none. *Stam.* Filaments four, awl-shaped, spreading, longer than the calyx, one of them accompanying each of its segments; anthers simple.

Female, on the same or a distinct plant, *Cal.* Perianth of four roundish, obtuse, permanent leaves, the two opposite ones lying over the others. *Cor.* none. *Pist.* Germen superior, heart-shaped; styles two, awl-shaped, long, reflexed, rough; stigmas simple. *Peric.* none, except the enlarged, juicy, coloured leaves of the calyx, assuming the appearance of a berry. *Seed* solitary, ovate, compressed, acute.

Obs. The second species of Linnæus, *M. nigra*, is sometimes perfectly dioecious; very frequently it is partially so, the stamens being in greater perfection in most of the flowers of one tree, the pistils in those of another.

Ess. Ch. Male, Calyx in four deep segments. Corolla none.

Female, Calyx of four leaves. Corolla none. Styles two. Seed solitary, invested with the pulpy calyx.

1. *M. alba*. White Mulberry-tree. Linn. Sp. Pl. 1398. Ger. em. 1507. Loureir. Cochinch. 555.—Leaves obliquely ovate, somewhat heart-shaped, nearly smooth—Native of China. Cultivated in that country, as well as in the warmer parts of Europe, for the sake of its leaves as the food of silk worms. (See *SILK*.) The tree is rather of humble growth, copiously and irregularly branched. Leaves alternate, on longish, slender, smooth stalks, obliquely ovate, in some degree heart-shaped, acute, two inches long, rather bluntly serrated, sometimes quite smooth on both sides, but more frequently roughish with minute points, without hairs or bristles, furnished with three principal ribs, and many veins hairy at their origin, bright green, deciduous. *Stipulas* lanceolate, varying in breadth, tawny, membranous, deciduous. Flowers green, in short, roundish, smooth, stalked spikes or heads, which are alternate, several near each other, about the base of the young branches. Fruit of a pearly white, sweetish, insipid, esteemed unwholesome.—Willdenow says it varies occasionally to a reddish, red, or black colour.—The leaves on young shoots, from a tree that has been much cut, sometimes become deeply sinuated or lobed.

2. *M. tatarica*. Tartarian Mulberry. Linn. Sp. Pl. 1399. Willd. n. 2. Pall. Ross. v. 1. p. 2. 9. t. 52.—Leaves elliptic-ovate, obtuse; slightly heart-shaped and equal at the base; equally serrated, smooth.—Native of inundated meadows on the banks of the Wolga and the Don. Pallas. Gerber's specimen in the Linnæan herbarium was gathered at Asoph, where Pallas says it is a garden plant. Willdenow, with great propriety, places this next after the *M. alba*, to which it is most nearly related, differing in its more elliptical, obtuse, and evenly serrated leaves, which are quite smooth. Gerber says the fruit is black. Pallas speaks of it as reddish, or pale, of no good flavour, though it is eaten raw, as well as dried, or made into a sweetmeat. A wine is also prepared from it, and a very well-flavoured spirit. This species is reported to be most esteemed for silk worms in China.

3. *M. nigra*. Common Mulberry-tree. Linn. Sp. Pl. 1398.



1398. Woodv. Med. Bot. 352. t. 129. (Morus; Camer. Epit. 179. Ger. em. 1507.)—Leaves broad-heart-shaped, unequally serrated, somewhat lobed, rough.—Native of Persia, and, as it is said, of the sea-coast of Italy. Cultivated throughout Europe for the sake of its fruit. Silk worms also will eat the leaves, though those of the first or second species are preferred by persons who rear these valuable insects for profit. This is a larger tree than either of the former, and readily distinguished by its broader, rougher, more coarsely and unequally serrated leaves; longer spikes of flowers; and larger, dark purple, highly agreeable and wholesome fruit. The bark of the root, which has a singular lilac tinge when dried, is acrid, bitter, and cathartic, though containing some mucilage. It is recommended as a vermifuge, in doses of half a drachm in powder.

4. *M. rubra*. Red American Mulberry-tree. Linn. Sp. Pl. 1399. Michaux Boreal-Amer. v. 2. 179. (Morifolia virginienfis arbor, loti arboris instar ramosa, foliis ampliffimis; Pluk. Phyt. t. 246. f. 4.)—Leaves ovate, taper-pointed; finely serrated; heart-shaped at the base; downy beneath; sometimes deeply lobed. Spikes long and cylindrical. Native of North America, from Canada to Florida. Cultivated here, according to Parkinson's *Paradisus* 596, early in the 17th century. He says it grows quickly with us to a large tree, and that the fruit is long, red, and pleasantly tasted. The taper-pointed leaves, downy beneath, distinguish this species, as well as its long, slender, somewhat interrupted spikes.—*M. canadensis*, Lamarck Dict. v. 4. 380, seems but a variety of this.

5. *M. indica*. Indian Mulberry-tree. Linn. Sp. Pl. 1399. Rumph. Amboin. v. 7. 8. t. 5. (Tinda Parua; Rheede Hort. Mal. v. 1. 87. t. 48, not 49.)—Leaves ovate, taper-pointed, coarsely serrated, roughish, naked; slightly heart-shaped at the base; often lobed.—Native of the East Indies, and of the isle of Bourbon. Willdenow says it is often met with in gardens, and called a variety of *M. alba*. From that species however it may always be distinguished by its rougher and long-pointed leaves; and from the *rubra* (whose leaves are nearly as much pointed), by their want of all downiness on both sides, as well as by the shorter and thicker spikes. The fruit is reddish. Both the figures above cited are bad. That of Rumphius is rather the best. He says the fruit is delicately flavoured, black when ripe; and that the Chinese feed their silk worms with the leaves. Loureiro mentions the same of the inhabitants of Cochin-China, who replant the tree every year, that the foliage may be tender.

6. *M. latifolia*. Broad-leaved Bourbon Mulberry-tree. Lamarck Dict. v. 4. 381. Willd. n. 6.—Leaves broad-heart-shaped, pointed, undivided, coarsely serrated; rough above, veiny beneath.—Native of the isle of Bourbon. Poiret in Lamarck describes the leaves as three inches broad, three and a half or four long; their under side remarkably reticulated, and marked with as many little pores, or depressions, as there are rough points on the upper surface.

7. *M. australis*. Southern Mulberry-tree. Lamarck Dict. v. 4. 380. Willd. n. 7.—“Leaves oval, long-pointed, naked, roughish, serrated, on long footstalks. Fruit short, with long permanent styles.”—Cultivated in the isle of Bourbon. It is not easy to conceive a clear idea of the characteristic marks of this species, by the information in the above work, but we suspect that it may be a variety of *M. indica*, some specimens of which in our possession, from the island here mentioned, answer to the description in several respects.

8. *M. mauritiana*. Laurel-leaved Mulberry-tree. Jacq. Coll. v. 3. 206. v. 4. 224. t. 22. f. 1. Ic. Rar. t. 617. Lamarck Dict. v. 4. 381. (*M. ampalis*; *ibid.* 380.)—Leaves elliptic-oblong, entire, rough on both sides.—Native of Madagascar and the Mauritius. A large and strong tree. The branches are rough with small irregular tubercles. Leaves numerous, scattered, three or four inches in length, and one or one and a half in breadth, elliptic-oblong, more or less obtuse, perfectly entire, rough with minute points on both sides, reticulated with innumerable veins. Footstalks thick, not an inch long, rough with small tubercles. Spikes short, cylindrical, axillary, solitary, drooping, on short, thick, rough stalks. Fruit green, sweet with some acidity, one and a half or two inches long. The French call this tree *La Rappe*, or the rasp tree, of Madagascar. We have a specimen from Lamarck, which proves his plant the same with that of Jacquin. It is a most distinct species, and ought to have been named *laurifolia* or *citrifolia*. The leaves seem calculated to serve as a fine file, or rasp, like some of the fig kind. See *Ficus*.

9. *M. tinctoria*. Dyer's Mulberry-tree, or Fustick-wood. Linn. Syst. Nat. ed. 10. v. 2. 1266. Mant. 495. Mill. Dict. ed. 8. n. 5. (*M. lactescens*, foliis oblongis acutis, paginis exterioribus productioribus, ligno citrino; Browne Jam. 339. *M. fructu viridi, ligno sulphureo tinctorio*; Sloane Jam. v. 2. 3. t. 158. f. 1. Tatai-iba; Pis. Brasil. 163. Marcgr. Brasil. 119.)—Leaves oblong, pointed, finely serrated, rough; heart-shaped and unequal at the base. Spines none?—Native of Jamaica and other West Indian islands, but particularly abundant about Campeachy on the main land, from whence the wood is exported, in great quantities, as an article of trade, and is well known, by the name of Fustick, as a yellow dye. Sloane describes the tree as having a large and straight trunk, sixty feet or more in height, with long and large roots, whose bark is very yellow. Bark of the trunk light brown, with yellow clefts. Wood very firm and solid, of a very fine yellow. Branches spreading. Leaves alternate, on shortish stalks, rough, dark green, pointed, larger towards the footstalk; Browne describes them as unequal at the base, and Pison, like Marcgrave, says they are finely serrated. This last character does not appear in their figures, nor in Sloane's. The latter describes the spikes as whitish and short, abundant at the ends of the branches, and the fruit as large as a nutmeg, round, formed like other mulberries, but greenish both within and without, with brown seeds. When ripe it is pleasant, though lusciously sweet. Miller has borrowed much from Sloane's account. He raised several plants from seed in the stove at Chelsea, but they appear not to have survived long, being very tender, though of quick growth. It is to be regretted that there is no good figure, nor scientific description, of this valuable tree. We have not even seen a specimen.

10. *M. Xanthoxylon*. Spinous Mulberry-tree, or Bastard Fustick. Linn. Syst. Nat. ed. 10. v. 2. 1266. Mant. 495. Jacq. Amer. 247. Mill. Dict. ed. 8. n. 8. (*M. tinctoria*; Linn. Sp. Pl. 1399. *Xanthoxylum aculeatum, carpinifolium, americanum, cortice cinereo*; Pluk. Phyt. t. 239. f. 3.)—Leaves ovate-oblong, pointed, serrated, nearly smooth. Spines axillary.—Native of the West Indies. Miller had it from Jamaica and the Bahama islands. Jacquin observed it in the vast woods near Carthagen. The former induced Linnæus to distinguish this from his *M. tinctoria*, though the specimen in his herbarium is what he originally described for that species, and subsequently marked *Xanthoxylon*. The leaves of this are smooth beneath, slightly rough to the touch on the upper side; their form ovate-oblong, pointed, unequal at the base; the margin rather strongly serrated. Spines axillary.



axillary, solitary, scarcely the length of the *footstalks*, which is about half an inch. Miller says there are two spines to each leaf, which on the older branches extend to the length of two inches. He observes that this *tree* does not grow to so great a size as the last. The *wood* is sold for the same use, but Linnæus mentions that its quality is inferior to that of the real *M. tinctoria*. Plumier's *Icones*, t. 204, quoted for this by Jacquin, is a rude resemblance of it, but the spines are represented under the *footstalks*, not axillary.—These two plants are well worthy the notice of some West Indian botanist. Swartz has nothing on the subject.

Morus, in *Gardening*, comprehends plants of the deciduous tree kind, of which the species cultivated are; the common mulberry-tree (*M. nigra*); the white mulberry-tree (*M. alba*); the paper mulberry-tree (*M. papyrifera*); the red mulberry-tree (*M. rubra*); the Indian mulberry (*M. indica*); and the dyer's mulberry or fustick-wood (*M. tinctoria*).

The first is the sort usually cultivated as a fruit-tree in the garden.

And there is a variety with palmate or elegantly cut leaves and a smaller fruit.

In speaking of the second kind, Miller observes that there are two or three varieties of it, which differ in the shape of their leaves, and in the size and colour of the fruit; but as it is of no other use but for the leaves, the strongest shooting and the largest-leaved should be preferred.

This sort is commonly cultivated for its leaves to feed silkworms in France, Italy, &c.; and in Spain, according to Mr. Townsend, they prefer the white mulberry in Valencia, and the black in Granada. But the Persians generally make use of the latter, and Mr. Miller was assured by a gentleman who had made trial of both sorts of leaves, that the worms fed with the latter produced much the best silk; but that the leaves of the black should never be given to the worms after they have eaten for some time of the white, lest they should burst. And sir George Staunton states, that the tender leaves growing on the young shoots of the black sort are supposed in China to be the most succulent or juicy.

*Method of Culture.*—All the sorts are capable of being increased by seeds, layers, cuttings, grafting, and inoculating or budding. But the seed method is chiefly practised for those which are not intended as fruit-trees, as they are very liable to vary in that way. It should be sown in the early spring, as about March, on a bed of fine earth, in a warm aspect, or upon a moderate hot-bed protected with glasses, in drills to the depth of a quarter of an inch. Water should be given slightly in dry weather, and in the heat of the day shade; covering it in cold nights. When the plants appear, they should be well guarded from frost in the early spring, and be kept clean during the summer, and properly shaded and watered, protecting them the first autumn and winter, removing them in the following March into nursery rows two feet apart, and one distant, to continue a few years, when they may be set out where they are to grow. They should not be removed either from the seed-bed or nursery-rows, till perfectly strong.

In cases where they are intended for feeding silk-worms, they should be kept in a low shrubby state of growth.

They appear, from sir George Staunton's account, to succeed best in China, on beds about a foot high in moist loamy soils.

Where they are raised for fruit, great care should be taken that the layers or cuttings be not only taken from old fruit-bearing trees, but that the branches made use of be also fruit-bearing.

The layers may be made from stools formed for the pur-

pose, or by raising up large boxes, baskets, or pots of earth, so as to lay the branches in them in the autumn, by the slit method, heading them down to two eyes each. When they have taken root in the autumn following, they may be removed into the nursery and managed as the seedlings.

The cuttings should be made from the former year's shoots of such trees and branches as bear well, and have fine fruit, not being shortened, but planted their whole length, leaving two or three buds above the ground. They should be planted in March on light rich earth, pressing the mould well about them, in order that it may be kept from getting too dry and parched.

As soon as they have become well rooted in the following spring they may be removed into the nursery, being regularly trained to stems by means of stakes fixed to each of them, to which the principal shoots should be trained, removing most of the rest, except such as are necessary to detain the sap for the support of the stem.

And they may be trained to standards, half standards, and dwarf standards. See PRUNING and TRAINING.

After standing three or four years in the nursery, they will be ready to plant out finally.

But little sun should be admitted at the first planting of the cuttings, but afterwards as much as possible, provided the earth about them be prevented from becoming dry, by moss or other means. The cuttings also succeed well when planted in a hot-bed; and in all cases when covered by hand-glasses. It is, likewise, the practice with some to plant them in October.

Grafting and budding, or inoculating, are certain methods of continuing the proper kinds, and should be practised in the usual manner upon the seedling stocks of any of the species. See GRAFTING and BUDDING.

It is suggested by Mr. Forsyth, that "as the fruit is produced on the young wood, only such branches as cross others, and such as are decayed, or broken by accident, should be cut out, applying at the same time the composition. When, however, the heads become too full of wood, it will be necessary to thin them, as the fruit is larger and better flavoured where the heads are kept thin of wood." And the planting of these trees, when for fruit, in grafts orchards and pleasure-grounds is advised, as "the finest of the fruit, when ripe, frequently drops, which, if it fall on dug or ploughed ground, will be soiled and rendered unfit for use, as the earth will adhere so to the fruit as to render the cleaning of it impracticable; but if planted on lawns, or in grafts orchards, the fruit can be picked up without receiving any injury. Another reason for planting these on lawns, or in orchards, is, that when full grown, they are too large for a kitchen-garden. The soil in which they thrive best is a rich, light, and deep earth."

"He has tried the efficacy of his composition on several of these trees in a very decayed hollow state of the trunk, cutting out all the dead wood and cankered parts of some, and heading down others that were stunted and sickly. After these operations they put forth vigorous branches, and bore excellent crops of fruit, more than double the size of that which they produced in their former state."

And "those who have any old decayed mulberry-trees are advised to treat them in the same manner; but those which are very much decayed should be headed down; this will throw them into a healthy bearing state, and in two or three years they will produce plenty of fine fruit."

And as old trees of this sort bear better and have finer fruit than the young ones, it is of importance to restore them.



Both the fifth and sixth forts are tender, requiring the protection of the bark stove.

The first is raised for the fruit, but the others chiefly for the purpose of variety and ornament. The third is used for having the bark made into paper in some countries.

MORXI, the Indian name of a pestilential distemper, very common in Malabar, and in some other parts of the East Indies, frequently carrying off great numbers of people.

MORZEGORSKOI, in *Geography*, a town of Russia, in the government of Archangel, on the W. side of the Dwina; 100 miles S.E. of Archangel.

MORZOVETZ, an island of Russia, in the straits between the Frozen and White sea. N. lat. 66° 40'. E. long. 45° 38'.

MOSA, in *Ancient Geography*, a river of Gaul, near the "Neuse."

MOSABAD, in *Geography*, a town of Hindoostan, in Agimere; 13 miles S.E. of Roopnagar.

MOSAIC, MOSAIC *Work*, or, as some choose to call it, *Mosaic*, an assemblage of little pieces of glass, marble, shells, precious stones, woods, or the like, of various colours, cut square, and cemented on a ground of stucco, &c. imitating the natural colours and degradations of painting. In this sense, mosaic work includes marquetry, or inlaid work, veneering, &c.

The critics are divided as to the origin and reason of the name: some derive it from *mosaicum*, a corruption of *musivum*, as that is of *musivum*, as it was called among the Romans. Scaliger derives it from the Greek *μουσα*, and imagines the name was given to this sort of work, as being very fine and ingenious. Nebricenis is of opinion it was so called, because *ex illis picturis ornabantur musea*.

But, in its more proper and restrained sense, mosaic only takes in works of stone, metals, and glass; those of wood being distinguished by the name of marquetry, or inlaying.

Others distinguish otherwise between mosaic and marquetry. In that properly called mosaic, they say the several stones are all of the same colour; and the changes and diminutions of colours and shades are made by applying different stones, one on another, but all of the same colour. Marquetry, on the contrary, consists of stones of different colours; and by these the several colours, shades, degradations, &c. are expressed.

Mosaic seems to have taken its origin from paving: the fine effect and use of pavements composed of pieces of marble of different colours, so well joined together, as that, when dried, they might be polished, and the whole make a very beautiful and solid body, which, continually trodden upon, and washed with water, was not at all damaged, gave the painter the hint, who soon carried the art to a much greater perfection, so as to represent foliages, masks, and other grotesque pieces of various colours, on a ground of black or white marble. In fine, observing the good effect which this kind of work had in pavements, and finding that it resisted water, they proceeded to line walls with it, and to take various figures by it, for the ornament of their temples and public buildings. But nature not producing variety of colours enough for them in marbles, to paint all kinds of objects, they bethought of counterfeiting them with glass and metal colours; which succeeded so well with them, that having given all manner of tints to an infinite number of little pieces of these two matters, to counterfeit stones of various colours, in order to get more colours, the workmen arranged them with so much art, that their mosaic seemed almost to vie with painting; this way of represent-

ing objects having this advantage, that it resists the injuries of the air as well as marble itself; and even grows more beautiful with time, which effaces all other kinds of painting.

But the moderns have gone yet farther; and, setting aside glass and metals, as too mean materials, have introduced, along with the finest marbles, the richest of precious stones, as lapis lazuli, agat, cornelians, emeralds, turquoises, &c.

Of these three kinds of mosaic work, that of coloured glass and metals is now little in use; though of a surprising lustre and durability: of the other two, that of marbles alone is in common use; the mosaic in precious stones being so very dear, that few workmen who apply themselves to it, make little else but petty works, as ornaments for altarpieces, tables for rich cabinets, &c. Though out of these must be excepted that sumptuous chapel of the dukes of Tuscany, which will be a noble monument of the magnificence and piety of those princes, as well as of the patience and address of the workmen employed in it.

We shall, however, enter into some detail of the manner of working in these three kinds of mosaic; to which we shall add a fourth much newer, yet equally ingenious with any of the rest, made with a kind of gypsum or talc, found in the stone quarries about Paris.

MOSAIC *Work of Glass*. This kind they begin with little pieces of glass, which they provide of as many different colours as possible. To this end, the glassman's furnaces being disposed, and their pots or crucibles full of the matter of which glass is made, or rather of glass already made, they put what metalline colour or dye they think fit in each crucible, always beginning with the weakest, and augmenting the strength of the colours from crucible to crucible, till they come to the deepest dye, as in mixing of colours on a pallet to paint in oil. When the glass has had sufficient coction, and all the colours are in their perfection, they take out the glass hot, as it is, laying it on a smooth marble, flattening it down with another marble, and then cut it into slices of equal bigness, and about the thickness of an inch and a half. They then, with an instrument which the Italians call *bocca dicane*, make some pieces square, and others of different figures and sizes, as occasion requires; these they dispose orderly in cases; as in painting in fresco, it is usual to range all the different tints in shells, according to their colour. If it be desired to have gold, either in the ground of the painting, or in the ornaments, or the draperies, they take some of the pieces of the glass, formed and cut in the manner just mentioned: these they moisten on one side with gum water, and afterwards lay them over with gold-leaf. They then put this piece, or several pieces at a time, on a fire-shovel, which they place in the mouth of the furnace, after having first covered them with another hollow piece of glass. Here they continue till such time as they become red-hot; after which the shovel is drawn out, all at once, and the gold becomes so firmly bound to the glass, that it will never afterwards leave it.

Now, to apply these several pieces, and out of them to form a picture, they first make a cartoon, or design; this they transfer on the ground or plaster, by calking, as in painting in fresco.

As this plaster is to be laid thick on the wall, it will continue fresh and soft a considerable time, so that there may be enough prepared at once to serve three or four days. This plaster is composed of lime made of hard stone, with brick-dust ground very fine, gum tragacanth, and whites of eggs: when it is thus prepared, and laid on the wall, and the design finished of what is to be represented; with



plyers they take out the little pieces of glasses, ranging them one after another, and still keeping strictly to the light, shadow, and different teints and colours represented in the design; pressing or flattening them down with a ruler, which serves both to sink them within the ground, and to render the surface even.

Thus, in a long time, and with an infinite deal of trouble, they finish the work; which is still the more beautiful, as the pieces of glass are more uniform, and ranged at more equal heights. Some of these are executed with so much justness, that they appear as smooth as a table of marble, and as finished and masterly as a painting in fresco; with this advantage, that they have a fine lustre, and will hold almost for ever.

The finest works of this kind, that have descended to us, and those from which the moderns have retrieved the art, almost lost, are those of the church of St. Agnes, formerly the temple of Bacchus, at Rome; besides some at Pisa, Florence, and other cities of Italy. The most esteemed among the works of the moderns are those of Joseph Pine, and the chevalier Lanfranc, in the church of St. Peter at Rome. There are some very good ones likewise at Venice.

*Mosaic Work of Marble, and Precious Stones.* These two kinds bear so near a relation to each other as to the manner of working, that, to avoid repetition, we shall give them both under one; observing, by the way, wherein the one differs from the other, either in the sawing or ranging of the stones.

*Mosaic of Marble* is used in large works, as in pavements of churches, basilics, and palaces; and in the incrustation and veneering of the walls of the same edifices. As to that of stones, especially precious stones, it is only used in small works, as before observed.

The ground of mosaic works, wholly marble, is ordinarily a mass of marble, either white or black. On this ground the design is cut with a chissel, having been first calked. When it is dug of a sufficient depth, i. e. an inch or more, it is filled up with marble of a proper colour, first contoured, or fashioned to the design, and reduced to the thickness of the cavities, with various instruments. To make the pieces thus inserted into the cavities hold, whose several colours are to imitate those of the design, they use a stucco, composed of lime and marble dust; or a mastic, which each workman prepares differently: after which, the work is half polished with a soft kind of stone.

The figures thus marked out, the painter or sculptor himself draws with a pencil, the colours of the figures, not determined by the ground, and in the same manner makes strokes or hatchings, in the places where shadows are to be; and when he has engraved, with a chissel, all the strokes thus drawn, he fills them up with a black mastic, composed chiefly of Burgundy pitch, poured on hot; taking off, afterwards, what is superfluous, with a piece of soft stone or brick, which, with water and beaten cement, takes away the mastic, polishes the marble, and renders the whole so even, that one would imagine it only consisted of a single piece; it is this kind of mosaic we see in the pompous church of the invalids at Paris, and the fine chapel of Versailles; and with which some entire apartments of that palace are incrustated.

*For Mosaic Work of Precious Stones*, there are required other and more delicate instruments than those used in marble; as wheels, drills, tin-plates, &c. used by lapidaries, and carvers in stone. As none but the richest marbles and stones enter this work, to make them go the farther, they are sawn into the thinnest leaves imaginable, scarcely exceeding half a line in thickness: the block to be sawed is fastened firmly

with cords on the bench, only raised a little on a piece of wood one or two inches high. Two iron pins, which are on one side the block, and which serve to fasten it, serve also to direct the saw. The pieces to be sawed are put into a vice contrived for the purpose: in which state, with a kind of saw or bow made of a fine brass wire, bent on a piece of springy wood, together with emery moistened with water, the leaf is gradually fashioned by following the strokes of the design made on the paper, and then glued to the piece.

When there are pieces enough fashioned to form an entire flower, or some other part of the design, they are applied. The ground, that sustains this mosaic, is usually of stone. The matter, with which the stones are joined together, is a stucco, or mastic, laid very thin on the leaves as they are fashioned; and the leaves in this state are applied with plyers. If any contour, or side of a leaf, be not either rounded enough, or squared enough, to fit the place where it is to be used, when it is too large, it is brought down with a brass file or rasp; and when too small, is managed with a drill, and other lapidary instruments.

*Manner of making Mosaic Work of Gypsum.*—This is a kind of coarse talc, or shining transparent stone, found in the quarries of Montmartre, near Paris, among the stones thence dug to make the plaster of Paris. It is different from the plaster; but retains the name which the Romans gave the plaster, viz. *gypsum*.

Of this stone, calcined in a kiln, beaten in a mortar, and passed through a sieve, they make a kind of artificial marbles, imitating precious stones; and of these they compose a kind of mosaic work which comes little short either of the durability or vivacity of the natural stones: and which has this advantage, that it admits of continued pieces, or paintings, of entire compartments, without any joining visible.

Some make the ground of plaster of Paris, others of freestone: if the former, it is spread in a wooden frame, of the length and breadth of the intended work, and about an inch and a half thick. This frame is so contrived, as that the tenons being only joined to the mortises by single pins, they may be taken asunder, and the frame be dismounted when the plaster is dry; this frame they cover on one side by a strong linen cloth, nailed all round; and being placed horizontally, with the linen at bottom, it is filled with plaster, passed through a wide sieve: the plaster being half dry, the frame is set perpendicular, and left till it be quite dry, and then taken out, by dismounting the frame. In this mosaic, the ground is the most important part. Now, to prepare the sifted gypsum to be applied on this ground, they dissolve and boil it in the best English glue; and, after mixing with it the colour it is to bear, the whole is worked up together into the ordinary consistence of plaster; and then taken and spread on the ground, five or six inches thick. It must be observed, that if the work be such, as that mouldings are required, they are formed with gouges, and other instruments.

It is on this plaster thus coloured like marble, or precious stone, and which is to serve as a ground to a work either of lapis lazuli, agat, alabaster, or the like, that the design to be represented is drawn; having been first pounced, or calked. To hollow or impress the design, they use the same instruments with the sculptors; the ground, whereon they are to work, not being much less hard than marble itself. The cavities, thus made in the ground, are filled up with the same gypsum boiled in glue, only differently coloured; and thus are the several colours of the original represented. To have the necessary colours and teints at hand, they temper quantities of the gypsum with the several colours,



colours, in little pots. When the design is thus filled, and rendered visible, by half-polishing it with brick, or soft stone, they go over it again, cutting such places as are either to be weaker, or more strongly shadowed, and filling them with gypsum; which is repeated till all the colours, added one after another, represent the original to the life. The work being finished, is scoured with soft stone, sand, and water; then with pumice-stone; and, lastly, polished with a wooden rubber, and fine emery: then a lustre is given it, by smearing it over with oil, and rubbing it a long time with the palm of the hand; which gives it a gloss nothing inferior to that of natural marble.

If it be only required to make a variegated table, or other work of several colours, without mosaic figures, the process is somewhat different. To this end, they only prepare separately, in large bowls, as many different colours as nature shews in the marble to be imitated; and, after incorporating them with the gypsum and glue-water, they take a trowel full of each, and dispose them in a trough, without any order; then, without mingling them, and only by cutting or crossing the gypsum of each trowel once or twice with each of the rest, they give them that beautiful confusion, for which natural marbles are so much valued: of these they then make their tables, or lay a mould, according to the work to be done.

As to *Mosaic Work of Wood*, more properly called *marquetry*, or *inlaid work*, the ancients were well acquainted with it, and used it for the adorning of their beds, tables, and other moveables: employing, for this purpose, ivory, besides the richest woods.

There are, besides these, two other branches of mosaic work; the one called *damaskening*, or *damask work*, consisting in an assemblage of gold or silver threads, of which are sometimes formed flat works, and sometimes basso-relievos.

The other is called *shell-work*; consisting of shells, artificial congelations, petrifications, &c. used in grottos.

MOSALA, in *Geography*, a town of Sweden, in the lapmark of Tornea; 18 miles N.E. of Kimi.

MOSALSK, a town of Russia, in the government of Kaluga; 48 miles W. of Kaluga. N. lat. 54° 20'. E. long. 34° 34'.

MOSAMA, the name of a particular kind of cotton, which appears to be the same with the capoc or mapu. According to Savary, this cotton covers the whole stem and the branches of the tree.

MOSBACH, in *Geography*, a town of Bavaria, in the Upper Palatinate; 20 miles E. of Amberg.—Also, a town of the duchy of Baden, containing three churches, and some manufactures of cloth, salt, &c.; 18 miles E. of Heidelberg.—Also, a town of the duchy of Wurzburg; 5 miles N. of Schweinfurt.

MOSBRUNN, a town of Austria; 8 miles S. of Vienna.

MOSBURG, a town of the duchy of Carinthia; 6 miles N.W. of Clagenfurt.—Also, a town of Bavaria, called also *Masberg*; 24 miles N.E. of Munich. N. lat. 48° 23'. E. long. 11° 55'.

MOSCHARIA, in *Botany*, from *moschus*, musk, in allusion to its musky scent. Forsk. *Ægypt-Arab*. 158. Juss. 419. An herbaceous plant, found flowering in the middle of April, in the deserts about Alexandria. Forskall describes it thus. "Root perennial. Stems several, annual, spreading, but somewhat erect, square, a span long. Leaves opposite, crossing each other, sessile, two inches long, linear, obtuse, villous, toothed at the end. Flowers axillary, from the very bottom of the stem, solitary, sessile, the size of a

small pea. *Calyx* globose, villous, five-toothed at the summit, closed, permanent. The place of the *corolla* is supplied by a pellucid membrane, enclosing the organs of fructification, like a bag, and necessary to be cut open before they can be investigated. *Filaments* none. *Anthers* four, two-lobed, surrounding the top of the stigma, combined. *Germens* four, obovate. *Style* thread-shaped. *Stigma* simple. *Seeds* four, naked, smooth. This paradoxical plant is placed by Jussieu amongst those which he could reduce to no certain order, but with an indication of its being possibly allied to the *Labiata*, or *Didynamia Gymnospermia*. The learned Mr. Correa de Serra has suggested to us, that it is probably a monstrous variety of the Linnæan *Teucrium Iva*, more properly referred by Schreber to *Ajuga*. (See Willd. Sp. Pl. v. 3. 11. Sm. Prodr. Fl. Græc. Sibth. v. 1. 389.) Mr. Correa's conjecture strikes us with conviction, though we recollect no similar metamorphosis in any other genus, particularly with regard to the stamens.

MOSCHATELLINA, *Moschatella* of Cordus, Hist. 172, so called by that author from its musky scent, and humble stature. See ADOKA.

MOSCHEL, or OBER-MOSCHEL, in *Geography*, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the district of Kaiserslautern; 32 miles N.N.E. of Deux Ponts. The place contains 670, and the canton 8191 inhabitants, in 24 communes. N. lat. 49° 46'. E. long. 7° 43'.

MOSCHELAPHUS, in *Natural History*, a name given by some writers to a creature of a mixed nature, produced by the copulation of a stag with a cow. Wagner tells us, that these creatures are sometimes seen in the mountainous parts of Switzerland; as are also the hippotauri, generated between a bull and a mare; but neither of these ever propagate their species. See BUCEPHALUS.

MOSCHI, in *Ancient Geography*, a people who inhabited a territory north of the Euphrates, between that river and the Colchide, and the coasts south-east of the Euxine sea, according to Strabo. Pliny says that Phrixus built among the Moschi the rich temple of Leucothæa, and established there an oracle. This temple was pillaged by the son of Mithridates. This people also occupied a part of mount Caucasus, where the river Phasis took its rise.

MOSCHIFERUM ANIMAL, or Moschus moschiferus of Linnæus, musk, in *Natural History*, the name of the creature which affords us the perfume called musk. See MOSCHUS.

MOSCHION, in *Biography*. Several ancient physicians of this name are mentioned by Galen, Pliny, Soranus, and Plutarch; some of whom were authors. But the only one, whose writings have been preserved, was a physician of the Methodic sect, of an uncertain age, but who probably lived about the eighth century. His work is extant both in Greek and Latin; but it is supposed that the former edition is a translation from the Latin. It was first printed at Basle in 1538, in the "*Libri Gyneciorum*" of Spachius, with the title of "*De Mulieribus affectibus Liber unus*;" and has been subsequently republished by Gasp. Wolff, with Gesner's Scholia, 1538; and by J. O. Dewes, Vienna, 1793, with notes. The work is of little value, shewing a very imperfect acquaintance with the subject of which it treats. Eloy Dict. Hist. Gen. Biog.

MOSCHO, or MOSHO, in *Geography*, a town of Africa, in the kingdom of Dongola, on the left bank of the Nile; 100 miles N.W. of Dongola. N. lat. 20° 26'. E. long. 30° 52'.

MOSCHOPULUS, EMANUEL, in *Biography*, a Greek grammarian who flourished in the 14th century, was a na-



tive of the island of Cretc, and wrote a treatise on grammar, first printed in 1545. His nephew, Emanuel, was a considerable mathematician and antiquary. He composed a Greek Lexicon in 1545. Moreri.

MOSCHUS, a celebrated Greek pastoral poet, was a native of Syracuse. It is not ascertained at what period he lived. Some authors make him a pupil of BION (see his article); but Suidas and some others speak of him as the friend of Aristarchus, who flourished about 160 years before the birth of Christ. The tenderness with which he speaks of Bion, in his beautiful elegy on that poet, is mentioned as a proof of his personal acquaintance with him. In the time of the latter Grecians, all the ancient Idylliums were collected, and attributed to Theocritus; but the claims of Moschus and Bion have been admitted with respect to a few little pieces. Moschus is a poet that possesses great elegance of style, and more delicacy and ingenuity in his conceptions than usual among Bueolic poets. His piece entitled "Run-away Love," in particular, deserves a high rank among sentimental pieces. His works, at least such as are usually attributed to him, are commonly printed in conjunction with those of Bion.

MOSCHUS, in *Natural History*, the musk, a genus of the order Pecora, and class Mammalia. The generic character is this: without horns; eight lower fore-teeth; the upper tusks are solitary, and projecting. Gmelin enumerates six species, but Dr. Shaw has mentioned seven, adding to those of Gmelin, the moschus *delicatulus*, or Leverian musk. The musk is one of those quadrupeds, of which the true form and natural history continued in great obscurity, long after the introduction and general use of the celebrated perfume which it produces. It seems to have been unknown to the ancients, but is mentioned in the eighth century by the Arabians, who used the drug in their medical practice. At that period, and long after, the animal was by some considered as a kind of goat, by others as a species of deer, or antelope, and of course was supposed to be a horned animal. About the close of the 17th century, a pretty accurate description of its figure and habits was given.

#### Species.

MOSCHIFERUS, or Thibet Musk, has a follicle near the navel; the tail is short. The size and general appearance of this animal resemble, in some degree, those of the small roebuck. It measures about forty inches in length, and twenty-seven in height from the top of the shoulders to the bottom of the fore-feet, thirty-three inches from the top of the haunches to the bottom of the hind-feet. The upper jaw is considerably longer than the lower, and is furnished on each side with a curved tusk about two inches long, and consequently exposed to view, when the mouth is closed. These tusks are thought to resemble a pair of crooked knives: their substance is a kind of ivory. The ears are long and narrow, of a pale yellowish cast in the inside, and deep brown on the outside. The general colour of the whole body is a kind of deep iron grey; the tips of the hairs being of a ferruginous cast, the remainder is blackish, growing much paler, or whitish, towards the roots; each hair is somewhat waved or undulated throughout its whole length, and is of a strong and elastic nature, growing rather upright on the animal, and very thick. The female is smaller than the male, and wants the tusks. These animals inhabit the Alpine mountains of Asia, Tonquin, and Siberia: they are also found about the lake Baikal, and near the rivers Jenesea and Argun. Their favourite haunts are the tops of mountains covered with pines, where they delight to wander in places the most difficult of access. In their habits and manners they

resemble the chamois, and other mountain goats, springing with great celerity, and, when pursued, taking refuge among the highest and most inaccessible summits. They are hunted for the sake of their perfume, which is contained in a receptacle about the size of a small egg, hanging from the middle of the abdomen, and is peculiar to the male animal. This receptacle is found filled with a soft, unctuous, brownish substance, of the most powerful and penetrating smell, which is the perfume, in its natural state, so well known. As soon as the animal is slain, the hunters cut off the receptacle or musk-bag, and tie it up ready for sale. The perfume is found in animals at all seasons of the year, but not in those that are young: the quantity is about a quarter of an ounce. The celebrated traveller, Tavernier, says he purchased, in one of his eastern journeys, no less than 7673 musk-bags. The penetrating nature of the musk-perfume is generally known: its colour is brown, with an unctuous and granulated appearance. At a distance, the scent is agreeable; but when brought too close, and in large quantities, it produces alarming effects. It has been known to force the blood from the nose, eyes, and ears, of those who have imprudently or accidentally inhaled its vapours.

INDICUS. The body of this species is tawny above, and whitish beneath, with spurious hoofs, and a somewhat lengthened tail. This is called the Indian musk, as being found in the East Indies. It has been described by Brisson, and is larger than the Thibet musk. Its head is very like that of the horse; the ears are erect and oblong, and the legs slender.

PYGMÆUS, or Guinea Musk, has the body above brown-tawny, beneath white, and without spurious hoofs. It inhabits India and Java, is very small, as its specific name imports, not being more than nine or ten inches long from the nose to the tail. It is a most elegant little animal, of a bright bay colour, but beneath and on the insides of the thighs it is white. Its shape, as well as its colour, is beautiful, and the legs are so slender as not to exceed the diameter of a swan's quill; the head, eyes, and ears, are rather large, and the aspect is mild. The natives of Java catch great numbers in snares, and carry them to markets in cages for sale; and some years since, they were purchased at as low a rate as two-pence or three-pence each. It obtained the name of Guinea musk from the opinion of Brisson and others, that it was a native of that country, which, it has been since ascertained, is not the case. The legs of the pigmy musk have been frequently eaped at the upper joint with gold or silver, and in that state used as tobacco-stoppers.

There is a variety of this species thus described: body rusty, mixed with black; neck and throat with perpendicular stripes.

MEMIMNA. Body above cinereous-yellow, beneath white; sides spotted with white, and with spurious or false hoofs. It is a native of the Indian islands, but is chiefly found in Ceylon and Java. It has been sometimes confounded with the *M. pygmæus*. It is readily distinguished by its remarkable colour and spots, and was raised into a distinct species by Mr. Pennant.

JAVANICUS, or Java Musk, is, as its name imports, a native of the island of Java, and is the size of a rabbit. The specific character is, body above ferruginous, beneath longitudinally white; tail longish, hairy, white beneath at the tip; the nose and ears are naked; the neck is grey, mixed with brown hairs; beneath white, with two grey spots almost connected; under the throat there are two long divergent hairs; the crown is longitudinally blackish.

AMERICANUS, or Brazilian Musk. Body tawny-brown; mouth



mouth black; throat white. This species is found in Brazil and Guinea; is nearly as large as a roe-buck, with ears four inches long; it is timid, active, and swift; the hair is soft and short; the head and neck on the upper part brown, and under it is white; the hind-legs are longer than those in front. It can, like a goat, stand with all the four legs together on the point of a rock. The animals of this species are often seen swimming in rivers, and may then be easily taken. The Indians hunt them, and their flesh is esteemed very delicate.

A variety of this species is tawny-brown, spotted above with white.

DELICATULUS, or Leverian Musk, is ferruginous-brown, and spotted above with white. In the Leverian Museum it was called the "small spotted musk." Dr. Shaw says, that the animal so named appears to be nearly allied to one figured by Seba, who assures us it is a native of Surinam, and describes it as of a ferruginous colour, thickly spotted with white, except on the head, breast, and belly, and that it is in all probability the same. In size it scarcely exceeds the pigmy musk, if the specimen referred to be of its full growth, of which there are doubts entertained, from the fineness and closeness of its hair.

MOSCKKA, or Moska, in *Geography*. See MUSCKA.

MOSCOS, the name of a tribe in the kingdom of New Granada, said to have been so called by the Spaniards, who, finding them more numerous than the other tribes, transferred the appellation from the *flies*, which abound in the country. Their conquerors found them governed by two elective princes, one of whom, denominated the "Zipa," resided at Bogota, while the "Zaqui" was established at Tunja. Others more justly infer, that the appellation of Moscos was a mere play of words upon the native name of *Muisca*. Next to the Peruvians, they were the most civilized people. They wore a close tunic of cotton, with a square cloak of the same fabric. On the head was a cap of the skins of animals, decorated with plumes of various colours; and over the forehead hung a crescent of the gold or silver which abounded in their country, the points being turned upwards. Their arms were adorned with bracelets, formed of stone or bone; the nose-ring was of gold; and on gala-days, the face and body were painted with "achiote," or roucou, which yields a vermilion tint, and with the juice of the "jagua," which produces a deep black. The women used a square cloak, called "chircate," fastened with a girdle; and over the shoulders a small mantle, called "liquira," fixed on the breast with a large pin of gold. The men wore their hair long, and divided in what is called the Nazarene form; while that of the women was loose, and darkened by art; the greatest affront being to cut off their hair. Both sexes were handsome, and of good dispositions. Their weapons were slings, swords of hard wood, and light darts. They believed in a great author of nature; and adored the sun, "Zuhi," and the moon, "Chia," as his representatives. Their immortality was material, according to the customary opinion among savages; and they buried the dead with ornaments of gold, and the precious emeralds of their country. They were in constant warfare with the Muzos and Colinas, but were feared and respected by all. The Musco language, called "Chibaha," was general throughout the kingdom; but it is now adulterated, and nearly lost, though most of the converted tribes of the kingdom of New Granada belong to this nation, and are generally of generous dispositions, bold, faithful, and robust, though inclined to ebriety. Estalla, cited by Pinkerton in his "Geography," vol. iii. For the account given of these people by Dr. Robertson

(Hist of America, vol. ii.), we shall refer to the article BOGOTA.

MOSCOW, called by the Russians *Moskva*, a city of Russia, the capital of a government, is situated on a river of the same name. The approach to this city is announced at the distance of six miles, by spires over-topping an eminence, at the extremity of the broad avenue cut through a forest; and upon proceeding two or three miles farther, a superb prospect of this vast city bursts upon the sight of the traveller. It stretches in the form of a crescent to a prodigious extent; while innumerable churches, towers, gilded spires and domes, white, red, and green buildings, glittering in the sun, form a splendid appearance; strongly contrasted, however, by an intermixture of wooden hovels. The neighbouring country is undulating; and the forest, abounding with plantations of oaks, beech, mountain-ash, poplars, pines, and firs, reaches within a mile of the ramparts, and is succeeded by a range of open pastures. In entering the city, or rather the suburbs, the river Moskva is crossed on a long kind of raft-floating, fastened to each bank, which the Russians call a "living-bridge," because it bends under the carriage. Before we give an account of the city itself, we shall detail some particulars respecting its origin, concerning which antiquaries have differed. The following account is received as the most probable. Moscow owes its foundation to George, son of Vladimir, or Wolodimer Monomaka, who reigned, says Chantreau, in 1147, but who ascended the throne of Russia, as Coxe says, in 1154. Being insulted by Stephen Kutchko, prince of Suzdal, he confiscated his domains, of which the lands, now occupied by this city, formed a part, and laid the foundation of a new town, which he called Moskva, from the river of that name. But under his successors, the town fell into such decay, that in the year 1295, when the empire was divided, and Daniel, son of Alexander Newski, received as his share the duchy of Moscow, and fixed his residence at this place, he was under a necessity of rebuilding it, and may therefore be considered as its new founder. The spot, now occupied by the Kremlin, was at that time a morass, overspread with wood, containing a small island, with a single hut. On this part Daniel constructed numerous buildings, consisting chiefly of churches and monasteries, and enclosed it with wooden fortifications. Here he first assumed the title of duke of Moscow; and when he succeeded his brother, Andrew Alexandrovitch, in the great duchy of Vladimir, he continued his residence at Moscow, which became the capital of the Russian dominions. The new metropolis was considerably enlarged by his son Ivan; and in 1367, his grandson Demetrius Ivanovitch Donski surrounded the Kremlin with a brick wall. Notwithstanding these fortifications, the town was taken, in 1382, by Tamerlane. This desultory conqueror soon evacuated it, and it again came into the possession of the Russians, but was frequently occupied by the Tartars, who, in the 14th and 15th centuries, over-ran Russia, and even maintained a garrison in Moscow, until they were finally expelled by Ivan Vassilievitch. To him Moscow has been indebted for its principal splendour, and under him it became the most considerable city of the Russian empire.

Moscow continued to be the metropolis of Russia till the beginning of the last century; when, to the great dissatisfaction of the nobility, but with great advantage to the state, the seat of empire was transferred to Petersburg. Notwithstanding the predilection which Peter conceived for Petersburg, Moscow is still the most populous city of the Russian empire. Here the chief nobles, who do not belong



to the court, reside; and here they gratify their taste for a ruder and more expensive magnificence in the ancient style of feudal grandeur, without being eclipsed, as at Peterburgh, by the superior splendour of the imperial establishment. This is the largest city in Europe: the circumference within the rampart, which encloses the suburbs, being 39 versts, or 26 miles; but being built in a very unconnected and straggling manner, its population does not in any degree correspond to its extent. Some Russian authors have, by an exaggerated statement, estimated the number of inhabitants at 500,000. According to Busching, who resided some years in Russia, Moscow, in 1770, contained 708 brick-houses, and 11,840 habitations of wood; 85,731 males, and 67,059 females; in all, only 152,790 souls, a computation which much diminishes the true number. According to an account published in the journal of St. Peterburgh, for 1781, the district of Moscow contained, in the beginning of 1780, 2178 hearths; and the number of inhabitants included 137,698 males, and 134,918 females; in all, 272,616 souls. At the end of the same year, the population of the district was found to be 140,143 males, and 137,392 females; in all, 277,535 souls. The accuracy of this computation has been confirmed by the account received by an English gentleman from the lieutenant of the police, who informed him that Moscow contained within the ramparts 250,000 souls, and in the adjacent villages 50,000. Dr. Clarke, in his "Travels," citing Mr. Heber's MS. journal, observes, that the population of Moscow has been greatly exaggerated; and that the intendant of police reckoned it at only 250,000 fixed inhabitants, and 30,000 retainers and servants of the nobles, who only reside in it during winter. Richter observes, that the population of Moscow differs according to the season of the year. In winter, when the nobility and their retainers flock to the metropolis, the inhabitants exceed 300,000; but in summer, when they retire to the country, they do not amount to 200,000. The births, deaths, and marriages at Moscow in the year 1799, appear, from a table published in the first volume of Mr. Tooke's "History of the Russian Empire," to be as follows:

Births.		Deaths.		Marriages.
Males.	Females.	Males.	Females.	Couples.
27,394	22,235	13,238	12,131	13,151

The same writer states, that the government of Moscow, which was the most populous when he published his valuable work, including the metropolis, contained upwards of 1,139,000 persons.

Mr. Coxe informs us, that of all the cities that ever claimed his attention, he never observed any one so irregular, so uncommon, so extraordinary, and so contracted, as Moscow. The streets, he says, are in general exceedingly long and broad; some are paved; others, particularly in the suburbs, are formed with trunks of trees, or boarded with planks, like the floor of a room; wretched hovels are blended with large palaces; cottages of one story stand next to the most stately mansions. Many brick structures are covered with wooden tops; some of the timber houses are painted, others have iron doors and roofs. Churches in every quarter are very numerous, built in the oriental style of architecture, some with domes of copper, others of tin, gilt or painted green, and many roofed with wood. In a word, some parts of this vast city have the appearance of a sequellered desert: other quarters, of a populous town; some of a contemptible village; others of a great capital. Upon the whole, this city exhibits a motley mixture of discordant

architecture. Dr. Clarke says, that "Moscow is in every thing extraordinary; as well in disappointing expectation as in surpassing it; in causing wonder and derision, pleasure and regret. Numerous spires, glittering with gold, amidst burnished domes and painted palaces, appear in the midst of an open plain for several versts before you reach the gate of the city. Having passed, you look about, and wonder what is become of the city, or where you are; and are ready to ask, once more, how far is it to Moscow? They will tell you, 'This is Moscow!' and you behold nothing but a wide and scattered suburb, huts, gardens, pigsties, brick walls, churches, dunghills, palaces, timber-yards, warehouses, and a refuse, as it were, of materials sufficient to stock an empire with miserable towns and miserable villages. One might imagine all the states of Europe and Asia had sent a building, by way of representative, to Moscow; and under this impression, the eye is presented with deputies from all countries, holding congress; timber-huts from regions beyond the arctic; plattered palaces from Sweden and Denmark, not white-washed since their arrival; painted walls from the Tyrol; mosques from Constantinople; Tartar temples from Bucharia; pagodas, pavilions, and virandas from China; cabarets from Spain; dungeons, prisons, and public offices from France; architectural ruins from Rome; terraces and trellises from Naples; and warehouses from Wapping. Having heard accounts of immense population, you wander through deserted streets. Passing suddenly towards the quarter where the shops are situated, you might walk upon the heads of thousands. The daily throng is there so immense, that, unable to force a passage through it, or assign any motive that might convene such a multitude, you ask the cause; and are told, that it is always the same. Nor is the costume less various than the aspect of the buildings; Greeks, Turks, Tartars, Cossacks, Chinese, Muscovites, English, French, Italians, Poles, Germans, all parade in the habits of their respective countries."

Moscow is distributed into the five following divisions, *viz.* Kremlin, Khitaigorod, Bielgorod, Semlamogorod, and Sloboda, or suburbs.

1. The *Kremlin* was probably thus denominated by the Tartars, when in possession of Moscow, from the word "krem," or "krim," which signifies a fortress. It stands in the central and highest part of the city, near the conflux of the Moskva and Neglina, which wash two of its sides; it is of a triangular form, and about two miles in circumference; and it is surrounded by high walls of stone and brick, constructed in 1491. It is filled with domes and steeples; and though it contains the most irregular edifices, none of them are of wood, nor of mean appearance. A plan was proposed to the late empress for uniting the whole Kremlin into one magnificent palace, which would, when executed, have exceeded every thing of the kind in ancient or modern days. A model of the proposed alteration was completed, and is preserved at Moscow; but the expence, even in that country of cheap labour, would have amounted to three millions sterling, and we therefore need not wonder that the design will proceed no farther than the preparation of the model.

2. The *Khitaigorod*, denoting, by a Tartar derivation, the "middle town," is situated between the Kremlin and Bielgorod. It is enclosed on one side by that wall of the Kremlin which runs from the Moskva to the Neglina, and on the other by a brick wall of lower height. This division of Moscow is much larger than the Kremlin, and contains the university, the printing-house, and many other public buildings, together with the shops of the tradesmen. The edifices



faces are mostly stuccoed or white-washed; and it has the only street in which the houses stand contiguous to each other, without any intervals.

3. The *Bielgorod*, or White-town, nearly encircles the two preceding divisions, and is supposed to have derived its name from a white wall with which it was formerly enclosed, of which some remains still exist.

4. *Semlalnogorod* environs the three other quarters, and takes its denomination from a circular rampart of earth, with which it is encompassed. This and the last division exhibit a grotesque group of churches, convents, palaces, brick and wooden houses, and mean hovels, in no degree superior to peasant's cottages.

5. The *Sloboda*, or suburbs, form a vast exterior circle round the parts already described, being invested with a low rampart and ditch. These suburbs contain, besides numerous buildings of all denominations, corn-fields, open pasture, and some small lakes, from which the *Neglina* originates.

The *Moskva* flows through the city in a winding channel; but, the season of spring excepted, it is only navigable for rafts: it receives the *Yausa* in the *Semlalnogorod*, and the *Neglina* at the western extremity of the *Kremlin*; both which rivulets are in summer almost dry. Beyond the *Yausa*, which is crossed by a raft bridge, is a palace, constructed for the late empress, when she had occasion to visit Moscow. This palace is not a single structure, but in the true style of Asiatic grandeur, a vast assemblage of numerous buildings, distributed into several streets, and bearing the appearance of a moderate town. Paul converted this palace into barracks for 2000 men. The gardens, which belonged to the old palace, built by Elizabeth, near the spot where the present structure was erecting, are still retained; they are of considerable extent, and in some parts of them were laid out in a pleasing and natural manner; but in general the old style of gardening prevailed, and presented rows of clipped yew-trees, long straight canals, and a profusion of preposterous statues. Under the auspices of Catharine, all these instances of grotesque taste were proposed to be removed, and to give place to more natural ornaments. This palace and gardens occupy the extremity of the suburbs within the compass of the exterior rampart which encircles the whole town.

The places of divine worship at Moscow are very numerous; and exclusively of chapels, there are, according to Mr. Coxe's account, 484 public churches, of which 199 are of brick, and the others of wood; the former are commonly stuccoed or white-washed, the latter painted of a red colour. According to Heym, in 1793, Moscow contained 22 convents, 9 cathedrals, and 326 churches. The church of the Holy Trinity, sometimes called the church of Jerusalem, which stands in the *Khitaigorod*, close to the gate leading into the *Kremlin*, has a kind of high steeple, and nine or ten domes; it was built in the reign of Ivan Vassilievitch II. The most ancient churches are generally square buildings, with a cupola and four small domes; some of copper, or iron gilt, others of iron tinned, either plain or painted green. The cupolas or domes are for the most part ornamented with crosses entwined with thin chains or wires; each cross (in the most ancient churches) has two transverse bars; the upper horizontal, the lower inclining, which, according to the opinion of many Russians, is supposed to be the form of the real cross; under the lower bar frequently occurs a crescent, the origin of which we have stated under the article *CRESCENT*. The inside of the church generally consists of three parts; that called by the Greeks *Προναος*, pronaos, by the Russians trapeza; the body; and the sanctuary or shrine. In the body of the church are frequently

four square and massive piers, which support the cupola; these piers, as well as the walls and ceilings, are painted with numerous representations of our Saviour, the Virgin Mary, and different saints. Towards the extremity of the body of the church is a flight of steps leading to the shrine; and between these steps and the shrine is usually a platform, upon which the officiating minister stands and performs part of the service. The shrine or sanctuary is separated from the body of the church by the "Iconostas," or screen, which is generally the part most richly ornamented, and on which the most holy pictures are painted or hung. Before the images of Jesus and the Virgin, and of some others, candles or lamps are usually suspended, and kept continually burning. In the centre are the folding, called the holy, royal, or beautiful doors, which lead to the shrine, within which is the holy table, as Dr. King (on the Greek church) describes it, "with four small columns to support a canopy over it; from which a 'peristerion,' or dove, is suspended, as a symbol of the Holy Ghost; upon the holy table the cross is always laid, and the gospel, and the pyxis, or box, in which a part of the consecrated elements is preserved, for visiting the sick or other purposes." Over the door of each church is the portrait of the patron saint, to which the common people pay homage as they pass, by taking off their hats, crossing themselves, and occasionally touching the ground with their heads. In the Russian churches, bells constitute no inconsiderable part of divine worship; for an account of which, see the article *BELL*. Some of these bells are of a stupendous size. The division of Moscow, called the *Kremlin*, abounds with churches, of which the two most remarkable, are St. Michael's, and the Assumption of the Virgin Mary; the one being the place where the sovereigns were formerly interred, and the other that in which they were crowned. These edifices are both in the same style of architecture, and were probably constructed by Solario of Milan, who built the walls of the *Kremlin*. In the cathedral of St. Michael are the tombs of the Russian sovereigns, which are raised sepulchres mostly of brick, in the shape of a coffin, and about two feet high. On great festivals all the sepulchres are covered with rich palls of gold or silver brocade, ludded with pearls or jewels. From the time in which Moscow became the imperial residence to the close of the 16th century, all the tzars have been interred in this cathedral, excepting Beris Godunof, whose remains are deposited in the convent of the Holy Trinity; the tzar, under the name of Demetrius, who was destroyed in a tumult, and Vassili Shuiski, who died in captivity at Warsaw. The cathedral of the Assumption of the Virgin Mary, appropriated to the coronation of the Russian sovereigns, is the most magnificent temple in Moscow. The screen is in many parts covered with plates of solid silver and gold richly wrought. From the centre of the roof hangs an enormous chandelier of massy silver, weighing 2940lbs., made in England, and presented, as Mr. Coxe says, by Morosof, prime minister of Alexey Michaelovitch; but, according to Storch, it was a present from the Venetians to Beris Godunof, and weighs 2800lbs. The sacred vessels and episcopal vestments are extremely rich, but of rude workmanship. Many of the painted figures, which cover the inside walls, are of a colossal size; and were executed towards the close of the 15th century. This church also contains a head of the Virgin, supposed to have been painted by St. Luke, and greatly celebrated in that country for the power of working miracles. According to the tradition of the church it was brought from Greece to Kiof, transferred from thence to Volodimir, and afterwards to Moscow. It seems to have been a Grecian painting, and



was probably anterior to the revival of the art in Italy. In this cathedral are deposited the remains of the Russian patriarchs, the first of whom was Job, before whose time the primate of the Russian church was suffragan to the patriarch of Constantinople. Job, being metropolitan archbishop of Moscow, was in 1588 installed in this cathedral patriarch of Russia, by Jeremias, patriarch of Constantinople. Philaretos and Nicon were distinguished patriarchs, and died much regretted at an advanced age in 1633. The last of these patriarchs, who are reckoned to have been 11, was Adrian, at whose demise, in 1699, Peter the Great refused to nominate a successor; and in 1721 the patriarchal dignity was formally abolished. In connection with this account of the churches at Moscow, we shall here introduce a brief description of some of the most prominent ceremonies performed in this city, at the time of Easter. Dr. Clarke, who presented to the public a picture of the Russian manners, approaching to a caricature, and who, as we hope and believe, has incurred the charge of exaggeration in some of his details, furnishes us with several instances of the grossest superstition, still prevalent in Russia. "All that has been said or written of the Roman Catholic bigotry," says this writer, "affords but a feeble idea of the superstition of the Greek church. It is the greatest libel upon human reason, the severest scandal upon universal piety, that has yet disgraced the annals of mankind."—"There are no people who observe Lent with more scrupulous and excessive rigour than the Russians. Travelling the road from Petersburg to Moscow, if at any time, in poor cottages, where the peasants appeared starving, I offered them a part of our dinner, they would shudder at the sight of it, and cast it to the dogs; dashing out of their children's hands, as an abomination, any food given to them; and removing every particle that might be left entirely from their sight. The same privation takes place among the higher ranks; but in proportion as this rigour has been observed, so much the more excessive is the degree of gluttony and relaxation, when the important intelligence that 'Christ is risen,' has issued from the mouth of the archbishop. During Easter they run into every kind of excess, rolling about drunk the whole week. When Easter was proclaimed, the inn where we lodged became a Pandæmonium. Drinking, dancing, and singing continued through the night and the day. But in the midst of all these excesses, quarrels hardly ever took place. The wild, rude riot of a Roman populace is full of humanity. Few disputes are heard; no blows are given; no lives endangered, but by drinking. No meetings take place of any kind, without repeating the expressions of peace and joy, '*Christos vosresets!*' 'Christ is risen!' to which the answer is always the same, '*Vo istincy vosresets!*' 'He is risen indeed!' On Easter Monday begins the presentation of the Paschal eggs; lovers to their mistresses, relatives to each other, servants to their masters, all bring ornamented eggs. Every offering at this season is called a Paschal egg. The meanest pauper in the street, preparing an egg, and repeating the words '*Christos vosresets!*' may demand a salute even of the empress. All business is laid aside; the upper ranks are engaged in visiting, balls, dinners, suppers, masquerades; while boors fill the air with their songs, or roll drunk about the streets. Servants appear in new and tawdry liveries; and carriages in the most sumptuous parade." During these eastern festivities, the pomp of Moscow was displayed in motley processions on the public promenades. These processions are made in carriages and on horseback; and the carriages surpasts, in number at least, any exhibition of the kind in Europe. On particular days, they exceed 2000, and have generally six, but never fewer than four horses to each. Yet nothing can be more

mean than the appearance of these equipages, when separately examined, whether we look at the awkwardness of the driver, the dirt of the harness, or the clumsiness of the vehicle. During Easter week, the Russians indulge their predilection for singing, and the numberless bells of Moscow are tolled incessantly; the cathedral bell sends a hollow murmur over the city, like the tones of a vast organ, or the rolling of distant thunder. The diameter of the bell is 16 feet.

At Moscow carriages are so common, that almost every person makes use of them. The equipages of the nobility with complete sets of horses, are frequently driving about the streets of Moscow. The city is of so large a compass, that hackney carriages are stationed in the streets for conveying passengers to the different quarters. These vehicles are without tops, have mostly four wheels, and are furnished either with a long bench, or one, two, or three separate seats, like arm-chairs, placed side-ways: their fares are so reasonable, that servants occasionally use them upon errands to distant parts of the city. The coachman generally drives at the rate of eight or nine miles an hour. Notwithstanding the number of coaches with six horses, that traverse the streets of Moscow, their accompaniments are ridiculously mean. When a coach is procured with six horses of different colours, the coachman and postilion are dressed like peasants, with high cylindrical hats; the coachman with a long beard and sheep-skin robe, sits on the box; the postilion in a coarse druggist garb, and mounted on the off-horse, according to the custom of the country. Behind the carriage is an enormous sack of hay, which, while the master is paying his visits, or regaling himself at dinner, is occasionally given to the horses.

"Nothing," says Mr. Cox, "can exceed the hospitality of the Russians. We never paid a morning visit to any nobleman without being detained to dinner; we also constantly received general invitations." The principal persons of distinction keep open tables, and are highly obliged by the visitors who resort to them without ceremony. Music during dinner generally makes a part of the entertainment at the tables of the nobility. Most of the Russian nobles have gardeners of our nation; and they are thus provided for their entertainments with pines, peaches, apricots, grapes, pears, cherries, and such fruits as can rarely in this country be obtained without the assistance of hot-houses. According to Richter, in his Sketch of Moscow, pines are reared in great abundance in the hot-houses about this city, and may be purchased for a ruble a-piece. In the country-house of prince Gallitzin, grapes have been seen nearly ripe in the open air. The Russian nobles are said to display a great degree of grandeur and magnificence in their houses, domesticities, and mode of living. The wealth of the nobles is enormous. Some of them have 70 and even 100,000 peasants: and their fortunes are estimated by the number of their peasants, who pay them, upon an average, 10 rubles annually, in specie. They exact labour, not merely from the males, but from women, and children from the age of 10 and upwards. Tithes are moreover demanded of linen, poultry, eggs, butter, pigs, sheep, lambs, and of every product of the land, or of domestic manual labour. Should a peasant by any misfortune be unable to furnish the tribute expected by his lord, he must beg, borrow, or steal to make up the deficiency. The only property a Russian nobleman allows his peasant to possess, is the food he cannot, or will not, eat himself; the bark of trees, chaff, or other refuse; quafs, water, and fish-oil. Traversing the provinces south of Moscow, where the soil is singularly fertile and productive, the labourers are, nevertheless,



theless, says Dr. Clarke, destitute of the common necessities of life; the lord claims all the produce. Mr. Heber differs in his statement of the condition of peasants from Dr. Clarke; observing, that with regard to their comforts or means of subsistence, they are not deficient. Their houses are well adapted to the habits of the people; their clothing is warm and substantial, and they appear to be sufficiently fed: but their political situation is very servile and distressing. They are liable to be levied as soldiers at the pleasure of their lords; for if a master is displeased with his slave, he may send him to the army whenever he thinks proper, and take a receipt from government. The wealth of the nobles is no where more conspicuously displayed than at their weekly balls. Every person who is a plebeian is excluded by the laws of the society, and though nobles only are admitted, the company occasionally consists of 2000 persons. The dresses are the most sumptuous that can be imagined; the favourite ornaments of the ladies are cameos, which they wear upon their arms, in girdles round their waists, or upon their bosoms. The drapery is disposed after the Grecian costume, and their hair is bound up round the head. The mode of dress in London and Paris are generally blended together by the ladies of Moscow; and in justice to their charms, it must be confessed, that no country in the world can boast superior beauty. The men on these occasions appear either in uniform or in coats of very rich embroidery, but neither men nor women evince the slightest degree of animation in the exercise of dancing. Dr. Clarke will not allow to the Russians the unqualified praise of hospitality. The dishes and the wines, he says, correspond in gradation with the rank and condition of the guests. Those who sit near the master of the house are suffered to have no connection with the fare or the tenants at the lower end of the table. The chosen dishes at a Russian table are carefully placed at the upper end, and are handed down to those guests who are stationed near the owner of the mansion, according to the order in which they sit; afterwards, if any thing remain, it is taken gradually to the rest; so that persons at the bottom of the table are often compelled to remain satisfied with an empty dish. The wine also degenerates in quality, until at last it is deteriorated into simple quafs. The number of attendants in waiting is prodigious. In the house of the young count Orlov 500 servants wait at table; many of them sumptuously clothed and many others in rags.

The palace inhabited by the ancient tzars stands at the extremity of the Kremlin; part of it is old, and remains in the same state in which it was, when it was built under Ivan Vassilievitch I. Additions have been made to it at various periods in different styles of architecture, so that it is a motley incongruous pile of building. This palace was the birth-place of Peter the Great in 1672. In the Kremlin there are two convents, one a nunnery founded in 1393, and the other a monastery for men. The nuns, who are prohibited the use of meat, live chiefly upon fish, eggs, and vegetables. The Russian archives are deposited in a strong brick building containing several vaulted apartments with iron floors, in the Khitaigorod. They were arranged by Mr. Muller in chronological order, and are enclosed in separate cabinets with glass doors. The MSS. relating to foreign kingdoms are also placed in separate divisions under the titles of the countries to which they belong. The archives contain also 13 volumes of letters, journals, notes, and other MSS. of Peter the Great, written with his own hand. The university is also situated in the Khitaigorod. It was founded, at the instance of count Shuvalof, by the

empress Elizabeth, for 600 students, who are clothed, boarded, and educated at the expence of the crown. To the university belong a printing office, a library, and an apparatus of philosophical instruments. Besides the university, there are two gymnasia or seminaries for the education of youth, endowed also by Elizabeth.

Moscow is the centre of the inland commerce of Russia, and connects the trade between Europe and Siberia. The navigation to this city is formed solely by the Moskva, which, falling into the Occa near Kolomna, communicates by means of that river with the Volga. But as the Moskva is navigable only in the spring, on the melting of the snow, the principal merchandize is conveyed on sledges in the winter. The whole retail commerce of the city is carried on in the Khitaigorod; where, according to a custom prevalent in Russia, as well as in most kingdoms of the East, the shops and warehouses are collected in one spot. The place is like a kind of collection of booths for a fair; the dwellings of those, to whom these shops belong, are situated at a distance, in another quarter of the town. Every trade has its separate department. Furs and skins form the most considerable article of commerce in Moscow, and the shops vending those commodities occupy several streets.

Among the curiosities of Moscow we may mention the market for the sale of houses. It is held in a large open space, in one of the suburbs, and exhibits "ready-made houses," scattered on the ground. The house, when selected, is sometimes paid for on the spot, and removed by the purchaser; or the vendor contracts to transport and erect it upon the place where it is designed to stand. In Moscow they have an admirable police for preventing riots, or stopping the concourse of people in case of fires, which are very frequent in those parts, where the houses are mostly of wood, and the streets laid with timber. At the entrance of each street is a "chevaux de frise" gate, one end turning upon a pivot, and the other rolling upon a wheel; near it is a centry box, in which a man is occasionally stationed. In times of riot or fire the sentinel shuts the gate, and thus immediately stops all passage. The Russians amuse themselves very much with playing at the game of chess.

Among the public institutions, the most remarkable is the Foundling hospital, endowed by the empress in 1764, and supported by voluntary contributions, legacies, and other charitable gifts. Benefactors have certain privileges granted to them by the empress, and a certain degree of rank proportioned to the extent of their liberality. The hospital is situated on a gentle ascent near the river Moskva; and is capable of receiving 8000 children, who are admitted at the porter's lodge without recommendation. In the hospital is a theatre, of which the decorations are the work of the foundlings: they constructed the stage, painted the scenes, and made the dresses.

The monastery, called "Troitskoi Kloster," or the monastery of the Holy Trinity, is distinguished in the Annals of Russia as the asylum for the Russian sovereigns in cases of insurrection; and is more particularly known to foreigners on account of the refuge which it afforded to Peter the Great, when he put an end to the administration of his sister Sophia. This monastery is about 40 miles from Moscow. At a little distance this monastery bears the appearance of a small town, and like many other convents in this country is surrounded with high brick walls, strengthened with battlements and towers. The parapet is roofed with wood, and the walls and towers are provided with embrasures for muskets and cannon; the whole is surrounded by a deep ditch. This place has withstood several sieges, and particularly baffled



all the efforts of Ladislaus, prince of Poland, who attacked it at the head of a large army. Besides the habitation for monks, the walls enclose an imperial palace, and nine large churches constructed by different sovereigns, which are splendid, and very rich in gold and silver ornaments, and costly vestments. The library of the convent contains a curious collection of books.

An eminence, called Sparrow-hill, and situated about four or five miles from Moscow, commands the best view of the city; and from thence the land about it may be perceived to be low and swampy, abounding with pools of stagnant water, and of course unhealthy. The climate is also dangerous from sudden transitions. The rapidity of vegetation is here very striking. In and about Moscow the rivers freeze about the middle or latter end of November, and break up in March or the beginning of April. The birch trees come out in May, and shed their leaves in September. Fahrenheit's thermometer stood at  $68^{\circ}$  on May 20th, and at  $44^{\circ}$  April 16th, and between these periods at intermediate degrees. At London on the same days it stood at  $61^{\circ}$  and  $55^{\circ}$ . The French army under the command of Bonaparte, emperor of France, took possession of Moscow, after several engagements with the Russians, September 14, 1812; but the place was previously set on fire by order of the governor, and so much desolated, that it afforded no satisfactory accommodation for the emperor and his troops. After enhancing the distress of the city and its vicinity, the French were under a necessity of abandoning the city, and making their retreat homewards. History scarcely records an event, that has been in every view so destructive to human life and to the possessions of individuals as the project, suggested by ambition, of invading and conquering Russia; but if the termination be auspicious, it may prove the salvation of Europe, the harbinger of peace, the extension of British commerce, and the prosperity of British manufacture. N. lat.  $55^{\circ} 45' 45''$ . E. long.  $37^{\circ} 21'$ .

MOSE, or *Villa del Mose*, a town on the bank of the river Tabasco, in the bottom of Campeachy gulf, from which great quantities of cocoa are shipped for Spain.

Mose, an island in the East Indian sea, about 30 miles in circumference. S. lat.  $6^{\circ} 20'$ . E. long.  $132^{\circ} 2'$ .

MOSECHE, a province of Angola, on the N. bank of the Coanza.

MOSELLE, a river of France, which rises in the mountains of the Vosges, joins the Rhine at Coblenz, and gives name to a department.

MOSELLE, one of the ten departments of the N.E. region of France, formed of the territory of Meffin, of French Luxembourg, and part of German Lorraine, and situated in N. lat.  $19^{\circ} 15'$ . It is bounded on the N. by the department of the Forests, on the N.E. by that of the Sarthe, on the E. by the departments of Mont Tonnerre and the Sarthe, on the S.E. by the department of the Lower Rhine, and on the S. and W. by that of the Meuse. It is 45 French leagues in length, 17 in breadth, and contains  $6552\frac{1}{2}$  kilometres, or 328 square leagues, and 353,788 inhabitants; and is divided into 4 districts, 30 cantons, and 934 communes. The four circles are Briey, including 48,552 inhabitants; Thionville, 98,456; Metz, 120,810; and Sarreguemines, 85,970. Its contributions in the 11th year of the French era were 3,018,085 francs, and its expences 320,834 francs, 96 cents. According to Haslenfratz it is divided into 9 circles and 76 cantons, and its population is 328,368. The capital is Metz. This department is fertile in grain, wine, fruits, and pastures. It has also mines of iron and coal.

MOSENIA, a town of Persia, in Chusistan; 36 miles S.W. of Sufter.

MOSERADA, a town of Italy, in the Trevisan; 6 miles N.N.E. of Trevigio.

MOSES, in *Scripture Biography*, the son of Amram and Jochebed, was born in Egypt in the year 1571 before Christ. Pharoah, the king of that country, perceiving that the Hebrews were becoming a very formidable nation, promulgated an order, under the severest penalties, that every male child born of Hebrew parents should be cast into the Nile. By the operation of this cruel edict, the king hoped to extirpate, by degrees, the whole Israelitish nation: parents were even enjoined to become the executioners of their own children, or at least to give such notice of their birth as to enable the officers of the king to perform the savage act. The reason of this decree, according to Josephus, was the prediction of an Egyptian prophet, that a Hebrew child was about to be born who would hereafter diminish the power of Egypt, and increase that of the Israelites. Though there is no authority for this in the sacred scriptures, which will be our chief resource in this article, yet it does not appear at all improbable, that the king's mind was impressed with some such notion when he issued his commands. At the birth of Moses, it is said that the natural reluctance of his parents to obey such a decree, was increased by the superior loveliness of the child; though mothers, probably, always see beauty in their new-born infants, which, for obvious reasons, is a very wise provision of Providence, and they ventured to keep him in concealment during the space of three months. At length, the extreme danger of a discovery which would have proved fatal to themselves as well as the infant, reduced them to the cruel necessity of exposing him. His mother took a small ark, made of the ligneous part of the papyrus, and having besmeared it with bitumen, to render it water-tight, placed the infant in it, and set it down among the rushes, on the marshy brink of the river. Anxious, however, about his fate, she placed her daughter Miriam, at a certain distance, to watch the circumstances that should occur. Soon after this, the daughter of Pharoah, coming to the river with her female attendants in order to bathe, discovered the ark, and sent one of them for it. She determined to save the life of the child, and to adopt him as her own; at this moment Miriam approached the princess, and made an offer to bring an Hebrew nurse to suckle the child, which she ordered her to do. She accordingly brought the infant's mother, who with unspeakable joy received the child, and she was strictly enjoined to treat him as her own, under the promise of being amply rewarded for her services. About three years afterwards, the princess adopted him for her own, called his name Moses, and caused him to be diligently instructed in all the learning of the Egyptians. But his father and mother, to whom, as we have seen, he had been restored, were at great pains to instruct him in the history and religion of his country. It is highly probable that the manner in which his life had been saved led them to hope he was intended for some great work, and hence they would be doubly careful of his education; and when arrived at years of discretion they, probably, by relating to him the secret of his birth and of the attending circumstances, inspired him with a similar notion.

Many things are related by Josephus and other historians concerning the early periods of the life of Moses, and though some persons consider them as entirely fabulous, yet we think it right to mention one or two, and the more so, as we are disposed to pay a considerable deference to the history of Josephus, and are not willing to suppose him capable



of introducing facts that were not authenticated by the best proofs, that he was capable of obtaining. Unless we go thus far, we must lose much that Christians value as important, which he has transmitted in his History and Antiquities.

In the Acts of the Apostles, chap. vii. 20, we are told that Moses was "exceedingly fair," or, as the original may be rendered, "beautiful through or in respect to God," that is, perhaps, through the divine blessing. Josephus relates, that when Moses was only three years old, that is, when he was specially introduced to Pharaoh's daughter as her adopted son, no one who saw him could avoid being struck with the singular beauty of his countenance, and he adds, people about their common business would leave it to gaze at him. Philo says, that at his birth he had a more elegant and beautiful appearance than denoted an ordinary person. According to Josephus and Eusebius, Moses acted as a leader in the wars, distinguished himself, and obtained many signal victories. When he was about forty years of age he left the court of Pharaoh, and went to visit his countrymen the Hebrews, who groaned under the ill-usage and oppression of their unfeeling masters. He is said "to have looked on their burthens;" that is, he made himself personally acquainted with their condition and treatment, endeavouring to devise some means of relieving them from the intolerable oppressions to which they were subject. While he was thus occupied he perceived an Egyptian smiting an Hebrew; looking about and seeing no one near, he ran to the defence of the latter, and having killed the Egyptian in the struggle, he buried him in the sand. In consequence of this act, which we know not how to justify, he was obliged to fly into the land of Midian, in Arabia, there to seek that safety which he was aware he could not expect in Egypt. Here he married Zipporah, daughter of the priest of Jethro, by whom he had two sons. At this period he was employed by his father-in-law in attending upon his flocks. As he was following this business upon mount Horeb, he had an extraordinary vision, which occasioned his return into the land of Egypt. In this vision he saw, or thought he saw, a bush in flames, but which was not consumed, and from the midst of the flames a voice proceeded, announcing the presence of Almighty God, and commanding the shepherd to go and deliver his brethren from the state of bondage in which they had been so long involved. Moses was desirous of excusing himself from this high and very important office, till he was assured, by miraculous signs, that he should be accompanied in his mission by the divine power. Upon his return to Egypt, he, with his brother Aaron, went to the court of Pharaoh, and told him that God commanded him to let the Hebrews depart, and go three days' journey into the desert, for the purpose of celebrating a festival in his honour, without giving offence to the Egyptians by making them the witnesses of their peculiar rites and ceremonies. The monarch was deaf to their intreaties, and so far from regarding the message delivered by Moses and Aaron as one sent from a superior power, declared that he acknowledged no such power, and in contempt of them, he ordered the labours of the Israelites to be increased, instead of allowing them any relaxation of which they made a demand. In the anguish of their hearts, under an additional load of misery, the Hebrews now attributed their sufferings to Moses and Aaron, who had attempted to free them from their bondage. The want of success which had attended his first application to the king of Egypt, would have prevented Moses from appearing again before him, had not God encouraged him by fresh assurances of his determination to rescue the Israelites with a triumphant arm, and invested him with a miraculous power over Pharaoh, to be exercised

in such displays of divine judgment on that proud monarch and his people, as should force him to dismiss them. Thus encouraged, Moses presented himself again before Pharaoh, and confirmed his former message by a miracle; which was followed, at different periods, by nine others, as may be seen in the books of Exodus, inflicting the most dreadful calamities upon the Egyptians, as punishments for their continued oppression of the children of Israel. The tenth and last miracle, or plague brought upon the Egyptians, was the death of all the first-born in the land, who were all cut off in one night. This dreadful calamity seems to have subdued the heart of Pharaoh, and he consented to allow the people of Israel to depart from his kingdom. The Egyptians likewise were impatient to hurry them out of their country, dreading that a further detention of them would bring on themselves entire destruction; and to hasten them, they freely parted with their most valuable things, which the text says the Israelites wished to *borrow*. Dr. Geddes and others observe, that the word does not necessarily mean to borrow, and we are disposed to believe that the Israelites consented to receive what the Egyptians gladly pressed upon them, with the view of hastening their departure.

As soon as Moses had returned to Goshen among his people, he made signals for collecting the whole body of the Israelites at a place of rendezvous, whence he began his march at their head before the break of day. They consisted of six hundred thousand men, besides women and children, and a multitude of strangers, who were probably proselytes of the gate, or persons who had renounced idolatry, though they were not yet circumcised, and all their flocks and herds. They proceeded on till they reached the borders of the Red sea; in the mean time Pharaoh had suddenly raised an immense army, pursued them and overtook them in this position. The Israelites were now hemmed in by the sea, impassable mountains, and Pharaoh's army: there was no way of escape left, and they, reduced to the utmost distress, began to reproach Moses for leading them out of Egypt to perish under the swords of their enemies. Moses comforted them with the assurance that this would be the last time of their seeing the Egyptians; and he had no sooner dismissed them, than God commanded him to direct their march towards the sea, promising that upon his stretching out his rod over it, the waters would divide, and make way for the Israelites to go through on dry land, while Pharaoh and his mighty hosts, venturing to pursue them, should perish in the returning waves. The events having corresponded with this promise, Moses instituted a festival of seven days continuance, in commemoration of the signal deliverance which the Israelites had experienced, and the total overthrow of Pharaoh and his army. For the occasion he composed a hymn to be sung alternately by the men and women, celebrating the greatness of God's power displayed in these wonderful events, and his amazing mercy towards his people. Moses now entered upon the arduous task of conducting his people towards the promised land. For an account of their march we must refer to the scriptures: it will be sufficient to observe, that the afflictions which they endured in the course of their journey, were intended to train them to a fitness for the divine blessings; to correct them of that fondness for superstition and idolatry to which they were strangely prone; to prepare them for a peculiar system of legislation which was to be formed and established among them, and which was calculated to preserve them from the corruptions of the rest of the world; and to maintain the belief in one living and true God, before they were to enter on the promised inheritance.

They arrived at the foot of mount Sinai on the third day  
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of the ninth month after their departure from Egypt. Moses having ascended several times into the mount, received the law from the hand of God, that is, in a miraculous manner, in the midst of thunders and lightnings, and concluded the famous covenant between the Almighty and the children of Israel. When he descended from Sinai, he found that the people had fallen into the idolatrous worship of a golden calf. Moses, shocked at such an instance of ingratitude towards the Almighty, and agitated at the alarming consequences that might follow from such a dereliction of principle, let fall the tables of the law which he was carrying in his hand, and caused all those to be put to death who would persist in the idolatrous worship. After this he again ascended into the mountain, and obtained new tables of stone on which the law was inscribed. On the descent of Moses his face shone with such brightness, that the Israelites did not dare to look upon him till he had covered himself with a veil.

The next act of Moses was to call an assembly of the people, in which he announced God's renewal of his covenant with them; enjoined the strict observance of the Sabbath; declared the command which he had received to erect a tabernacle of the most costly materials; and invited them to liberality in their voluntary offerings for the completion of this undertaking. On this occasion there appears to have been a generous emulation in all the people to contribute their most valuable effects and ornaments towards the work. The tabernacle was finished in six months, when it was consecrated by Moses, who anointed Aaron as the high priest, and his sons as assistants in the worship, and thus commenced, in the year B. C. 1490, that pompous worship of the Deity which was adapted to the then existing state of the Israelites, who were incapable of being affected with a purer and more spiritual one. This tabernacle served the Israelites instead of a temple till the time of Solomon.

After the camp had remained almost a year in the neighbourhood of mount Sinai, the Israelites recommenced their marches through the wilderness, under the immediate direction of the most high God, who governed them immediately by means of his servant Moses, whom now he had chosen to be the interpreter of his will and the promulgator of his commands among the people, but he required all the honours belonging to their king to be paid to himself. He assumed to dwell in the tabernacle, which was always in the midst of the camp, and he denounced punishments against the transgressors of his laws. This was properly the period of the theocracy, taken in its full extent; for God was not only considered as the true and only proper object of religious worship, but as the sovereign to whom the honours of supreme majesty were paid. In their long journeys through the wilderness, every measure both of the leader and of the people was done by the direction of the Almighty, who rewarded their fidelity and obedience by a series of miracles, victories, and successes. After Moses had regulated every thing regarding the civil administration, and the marching of the troops, he led the Israelites to the confines of Canaan, to the foot of mount Nebo. It was from this mountain he was to take a view of the promised land which it was not permitted him to enter. Being apprized that he was to die on the mountain, he diligently employed his few remaining days in settling the affairs of the public in the best order in his power. His first care was to have Joshua confirmed his successor, in the most solemn manner, who, being filled with the spirit of Moses, undertook nothing without consulting his Maker. Moses also appointed the limits of the land which they were to conquer, and the distribution of it by lot according to God's command, and enjoined several other

regulations relative to civil and ecclesiastical matters. He next assembled the people around him, and recapitulated to them, in a long and pathetic discourse, all that had taken place since their departure from Egypt to that time. In a subsequent assembly he caused the whole nation to ratify the covenant which their fathers had made with God in mount Horeb, and concluded with calling heaven and earth to witness the truth of what they had heard from him, the reasonableness of those laws which God had given them, and the certainty of the blessings or curses which would follow the observance or the breach of them. To impress strongly on their minds what he had delivered, he composed a psalm, in which the substance of his addresses is expressed in elegant and lively language, and it has been regarded as an inimitable piece of ancient poetry. Having caused it to be read before all the people, he delivered it to Joshua to be afterwards learned by them and all their posterity. The last transaction of Moses with the Israelites, was to summon them again to receive his farewell and prophetic blessing upon the people in general, and upon each tribe in particular. As soon as he had delivered his last blessing, he went up alone to mount Nebo, and from Pisgah, its highest eminence, had a prospect of all those regions which God promised to the posterity of Abraham. Immediately afterwards, Moses died, at the age of 120, in the year B. C. 1451, when his mental faculties were in perfect order, and neither his eye-sight nor his natural vigour was in the least impaired.

That Moses was an eminently great man will be readily admitted by those even who dispute his claims to supernatural communications with the Deity. We cannot, however, give up our belief in his miracles without materially affecting the credibility of the whole history, and of the other facts dependent upon it: and we see sufficient evidence to induce us to take the account as it stands in the scriptures, which, though not without difficulties, is not wholly irreconcilable with the dictates of reason and sound sense. (See MIRACLE.) The zeal of Moses for the honour of the one living and true God, forms too conspicuous a feature in his character to be overlooked: it is indeed the principle which lies at the foundation, and constitutes the central point of all his institutions. The writings that bear his name, whether considered as historical documents, or as furnishing a system of legislation, are highly interesting and important. In the former point of view they supply us with the earliest records of the world from the creation to the birth of Abraham; and a particular history of the Hebrew nation, the descendants of Abraham, carried on in a regular series, till the death of Moses, a period all together equal to more than two thousand five hundred years. With respect to the system of legislation which these writings contain, as far as it is of a moral nature, it is unquestionably pure and excellent: its political and judicial regulations are wise and equitable, and the ritual part of it was adapted to establish and secure the worship of the one true God. Dr. Geddes, speaking of the great excellence of these writings, in point of composition only, says, "I know not if it would be too much to affirm, that whether they be considered as a compendium of history, or as a digest of laws, or as a system of theology, or as models of good writing, they are in some respects unequalled, in none overmatched, by the best productions of ancient times."

There seems little reason to doubt that the five first books of the Old Testament, commonly known by the name of the Pentateuch, were written by Moses, excepting the last chapter of Deuteronomy, which is generally thought to have been added by Ezra. Some few have refused to give



give him the credit of them, and have founded their opinion on this, that he always speaks of himself in the third person. But this manner of writing is not peculiar to Moses; it occurs in several of our best historians, such as Xenophon, Cæsar, and Josephus. Dr. Geddes thinks that the first appearance of the Pentateuch, in its present form, was under the reign of Solomon, when he imagines the books were compiled from the journal of Moses, and other ancient documents. Besides the Pentateuch, some authors have attributed to Moses the book of Job, and eleven of the Psalms, from the 90th to the 100th both inclusive. As authorities to this article we refer to the Pentateuch: to the Antiquities of Josephus; to Geddes's Translation and Critical Notes; and to Priestley's Notes on the Bible, vol. i.

MOSES, CHORENENSIS, in *Biography*, a celebrated Armenian archbishop, who flourished about the year 462. He was esteemed one of the most learned men of his nation, having studied Greek at Athens, from which language he made many versions into the Armenian: his principal work is "A History of Armenia," from the deluge to the middle of the fifth century, written in his native tongue. This was published with a Latin version, in 1736, by the sons of the famous William Whiston. It is thought to be a valuable piece of history, though mixed with no small portion of fable; it contains many national records, not to be met with elsewhere. - We have, by the same author, "An Abridgment of Geography," published at Amsterdam in 1668: and some "Sacred Canticles," to be sung in the Armenian language on the anniversary of Christ's presentation at the temple.

MOSES, J. GOTTFRIED, organist of Auerbach, in Voigtland, a professor of singular abilities, both as a player and composer. In 1781 he published at Leipzig odes and songs; in 1783 a second part; and in 1785 he published at Dresden, *Ein Handbuch für Orgel-Spieler*; the first part consisting of preludes and fantasias, the second of trios, and the third of fugues. These compositions manifest invention, science, and a complete knowledge of the genius and treatment of the organ.

MOSES, in *Sea Language*, is a very flat broad boat, used by merchant ships, amongst the Caribbee islands, to bring hogheads of sugar off from the sea-beach to the shipping, which are anchored in the roads.

MOSES Point, in *Geography*, a cape on the E. coast of Newfoundland; 5 miles S.W. of Cape Bonavista.

MOSHABBEHITES, or ASSIMILATORS, in *Ecclesiastical History*, a sect of Mahometans, who, misinterpreting some expressions of the koran, allowed a resemblance between God and his creatures, supposing him to be a figure composed of parts, or members, either spiritual or corporeal, and capable of local motion, of ascent and descent, &c.

MOSHAK, in *Geography*, a town of Arabia, in the province of Yemen; 20 miles N.W. of Doran.

MOSHEIM, JOHN-LAWRENCE-VON, in *Biography*, a learned German writer, to whom we have been indebted for many curious and interesting facts in the course of our biographical articles, was born at Lubec in 1694. He was descended from a noble family, a circumstance that seemed to open to his ambition a fair path to civil promotion, but his zeal for the interests of religion, his insatiable thirst after knowledge, and, more especially, his predominant inclination for sacred literature, induced him to consecrate his talents to the service of the church. In his youth he had been much attached to poetry and the belles lettres, but as he advanced in life he declined all attention to the Muses for objects which he deemed of superior worth. The fame of his acquirements was soon spread over Germany, and the universities of that country were anxious to load

him with literary honours. He received invitations to several professorships, accepted one from the king of Denmark, and became professor at the university of Copenhagen. From this city he removed to the university of Helmstadt, where he was placed in the divinity chair, and was honoured with the character of ecclesiastical counsellor to the court. By George II. of England, M. Mosheim was appointed chancellor to the university of Gottingen, where he died in 1755, in the sixty-first year of his age. He published a Latin translation of Dr. Cudworth's "Intellectual System," with notes: and in the year in which he died he gave the public his "Ecclesiastical History," which was a considerable enlargement, with great improvements, of a smaller work in two volumes 12mo. entitled "Elements of Christian History." This latter work was intended almost wholly for young students, as a compendium of their lectures: it became very popular, and gave occasion to the Ecclesiastical History, published in the Latin language, entitled "Institutiones Historiæ Ecclesiasticæ." It has been translated into English by Dr. MacLaine, with judicious and valuable notes, and improved by useful chronological tables. Its English title is "An Ecclesiastical History, Ancient and Modern, from the Birth of Christ to the Beginning of the present Century." The other works of Mosheim are, "De Rebus Christianorum ante Constantinum, &c." "Historia Mich. Serveti;" "Dissertationes Sacræ;" besides these he published various illustrations of the sacred writings, and a collection of sermons, which are highly spoken of by those who are familiar with the language in which they are written. In estimating his general character his biographer says, "In depth of judgment, in extent of learning, in the powers of a noble and masculine eloquence, in purity of taste, and in the laborious application to all the various branches of erudition and philosophy, he had certainly very few superiors."

MOSHELLY, in *Geography*, a town of Bengal; 28 miles S.E. of Kishenagur.

MOSHO. See MOSCHO.

MOSINA, a town of South America, in the government of Caraccas; 15 miles S.W. of Cumana.

MOSKOE, or MOSKENES, an island in the N. sea, near the coast of Norway; S.W. of Marikrom. N. lat. 67° 4'.

MOSKOVSKAIA, a government of Russia, about 100 miles long, and 92 broad, the capital of which is Moskva, or Moscow. N. lat. 54° 50' to 56° 40'. E. long. 35° to 38°. See Moscow.

MOSKVA, a river of Russia, which rises near Ruza, passes by Moscow, and runs into the Oka, near Kolomna. See Moscow.

MOSLY, a town of Poland, in the palatinate of Belcz; 8 miles S. of Belcz.

MOSON, *Mademoiselle*, in *Biography*, an opera-dancer in England during the seasons of 1786 and 1787; who, though a neat and pleasing performer in general, chiefly distinguished herself by the arch and prudish manner in which she danced the *pas russe*.

MOSONGO, in *Geography*, a province of Africa, in the kingdom of Anziko, E. of Pombo.

MOSPONY, a town of the island of Ceylon; 24 miles E. of Candi.

MOSQUE, or Moske, among the Mahometans, is a temple set apart for the exercises of their religion.

The word comes from the Turkish *mesjid*, or *meschit*, which properly signifies a temple built of wood, such as the Turks first used. Hence the Spaniards derive their *mezquita*, and the Italians *moscheta*, and the French and English *mosque* and *mosk*. Borel derives the word from the Greek *μορξος*, calf, because of the frequent mention of a cow



cow in the Alcoran: but others, with the greatest appearance of reason, derive it from the Arabic *masgiad*, a place of worship.

There are royal mosques founded by the emperors, as the Solimania, and Velidea, at Constantinople; and private mosques founded by mufties, viziers, bassas, &c. The mosque of Sancta Sophia is now a magnificent edifice. That at Cordova in Spain was formerly much celebrated.

Mosques are built like large halls, with isles, galleries, and domes; and are adorned on the inside with compartments, and pieces of Arabesque work. On one side is always found a pool with several cocks; and on the top is placed a crescent.

The women are not allowed to enter the mosques, but stay in the porches without.

Most of the mosques have a kind of hospital belonging to them, in which travellers of any religion are entertained during three days.

The Turks have converted most of the Christian churches into mosques.

**MOSQUITO BANK**, or **MOSQUITOS**, in *Geography*, a cluster of small islands, near the coast of Honduras, which gives name to the tract of country called *Mosquito Shore*; which see. N. lat.  $14^{\circ} 30'$ . W. long.  $82^{\circ} 10'$ .

**Mosquito Bay**, a bay at the S.E. extremity of the island of St. Christopher.

**Mosquito Cove**, a bay on the coast of Greenland. N. lat.  $64^{\circ} 55'$ . W. long.  $52^{\circ} 57'$ .—Also, a bay on the W. coast of the island of Antigua. N. lat.  $17^{\circ} 12'$ . W. long.  $61^{\circ} 35'$ .—Also, a bay on the N. coast of the island of Jamaica. N. lat.  $18^{\circ} 28'$ . W. long.  $78^{\circ} 5'$ .

**Mosquito Island**, one of the smaller Virgin islands, near the N. coast of Virgin Gorda. N. lat.  $18^{\circ} 25'$ . W. long.  $63^{\circ} 15'$ .

**Mosquito Islands**, small islands on the coast of Main. N. lat.  $43^{\circ} 55'$ . W. long.  $69^{\circ} 10'$ .

**Mosquito Key**, a small island on the Spanish Main. N. lat.  $14^{\circ} 25'$ . W. long.  $82^{\circ} 25'$ .

**Mosquito Keys**, a cluster of islets and rocks in the Spanish Main. N. lat.  $12^{\circ} 47'$ . W. long.  $82^{\circ} 45'$ .

**Mosquito Point**, a cape at the entrance of Port Royal bay in Jamaica.—Also, a cape on the coast of Guiana, at the entrance of the river Essequibo.

**Mosquito Shore**, or *Mosquito*, a tract of country in North America, bounded on the N. and E. by the sea, on the S. by Nicaragua, and on the W. by Honduras. The Spaniards have claimed it as part of Honduras, though they have here no settlements. Having murdered most of the inhabitants when they first invaded this part of Mexico, those who fled into the mountains have retained an invincible hatred of them; and hence they have been ready to join with any Europeans, and particularly with the English, who touch upon their coast, against the Spaniards. As the Mosquito Indians are excellent marksmen, they are employed by the English to strike the Manati, and many of them sail in English vessels to Jamaica. When the duke of Albemarle was governor of this island, these Indians put themselves under the protection of the crown of England, and their king received a commission from this crown. Since that period, when their king dies, the next male heir goes to Jamaica to receive his commission, and before this ceremony he is not acknowledged by his countrymen. Some time ago offers were made by England for settling colonies on the Mosquito shore. The English evacuated this country in the years 1787 and 1788, after having had possession of it for about eighty years. Since the English have left it and the Spaniards have recovered it, the king of the Mosquito shore is absolute; for retaining their aversion to the

Spaniards, they will not allow the king of Spain to be their master, though they were satisfied with considering the king of England in this relation.

**Mosquito Indians**, Indians of North America, who inhabit a territory about N. lat.  $46^{\circ}$ . W. long.  $94^{\circ}$ .

**MOSQUITOS**, a town of the island of Cuba; 27 miles W. of Havanna.

**MOSS**, in *Botany*. See **MUSCI**.

**Moss-Berry**. See **WHORTLE-Berry**.

**Moss, Heath**. See **CORALLOIDES**.

**Moss-Tree**. See **LIVERWORT**.

**Moss, Upright fir**. See **LYCOPodium**.

**Moss, Wall**. See **BRYUM**.

**Moss**, in *Agriculture*, a well-known vegetable substance or plant, that frequently spreads over the surface of old grass-lands in some districts.

This plant or vegetable is most apt to fix itself upon the surface of old grass lands of the meadow and pasture kinds, in which it produces much injury by drawing away the nourishment of the grass plants, and of course lessening in a high degree the grassy herbage. It affects such as are of the clayey moist description, in cold exposed situations, the most frequently, choking the grass by spreading closely over it. And it is observed by a late practical writer, that "various means have been proposed by writers on husbandry, for the removal of this most destructive vegetable. But as it requires a considerable proportion of superficial moisture to promote its growth and extension on the soils which it infects, it is probable, that the application of such substances as have a tendency to absorb, and take up the superabundant degree of wetness by which it is supported, must be of great utility and advantage. In this view lime has been applied evenly over the surface, in such cases, with much benefit. He has, however, experienced superior advantage, by covering mossy grass-lands with a thin even coat of attenuated calcareous matter, in union with a sandy material, such as is scraped up from roads, when formed into a compost with about one-fourth part of well rotted farm-yard dung; as by this application a new, and more vigorous description of grasses is brought up, which soon overpowers the moss plants, and thus wholly destroys them. For the same purpose, and at the same time promoting the improvement of the lands, as well as bringing the herbage into a finer state, the penning or folding of sheep has been advised by Mr. Kent. This method may probably be had recourse to with the most success either in the close of the summer season, or early in the spring months; the latter is, however, to be preferred, as from the grass immediately covering the surface, more effect may be produced in smothering and destroying the mossy vegetation. In this practice, advantage is obtained in different ways, as by the effect which the treading has in opening and removing the close netted texture of the moss, and that of the urine and dung in promoting the more strong growth of the grass plants. Harrowing with short, sharp-tined, light harrows, is likewise a practice that may be found useful in some cases, especially previous to the application of such substances or composts as have been just mentioned, as by such means the matted nature of the moss is broken down, and rendered more open and fit for admitting the manure to the roots of the grass plants, and exerting its full influence in promoting their vigorous growth, and at the same time the spreading of the moss in some measure prevented. After such harrowings have been performed, some have recommended it as an advantageous practice to sow grass seeds and especially white clover over the surface. Different sorts of implements have been contrived for dressing the swards of grass-lands when in this condition; such as the above and different



different sorts of scarifiers and sward-cutters; but it may be very conveniently performed by a sward-dresser lately invented by Mr. Amos, and represented in his Minutes on Agriculture and Planting. This is a tool which should be in the hands of all farmers where grass husbandry is much practised. See *SWARD-Dresser*.

But all old grass-lands, when much overrun with moss, should be broken up for the purpose of tillage, in order to their being laid down again to grass after a proper course of crops; as it is probably impossible to render them good grass-lands again in any other method. In many situations this is a mode of proceeding which would produce great improvement.

Moss, a term frequently made use of also to signify a particular sort of earthy or boggy material, found in some low situations in different parts of the kingdom, but particularly in the more northern districts, being formed by the decay of different vegetable and other substances. This earthy material is of different natures in different situations, as wood moss, black peat moss, flow moss, or red bog, &c. The first, which is principally composed of ligneous substances, is probably the best for manure; and the black peat, which is chiefly composed of heath, decayed sphagnum, and the roots of the eriophora, is the next in the goodness of its properties. The third, which is chiefly derived from the sphagnum in a more fresh state, is the least useful. Mosses are of very different depths, textures, and qualities, but all of them are greatly impregnated and loaded with water, holding it like a sponge; some have the depth of not more than three or four feet, while others have as many yards. They require much draining and consolidating to bring them into cultivation. See *Mossy Land* and *PEAT Moss*.

In the Survey of Perthshire, it is stated that, "in every flat, and on some slopes of the higher hills, there are mosses of various dimensions, of various depths, and of various degrees of firmness, according to the time that has elapsed since the moss began to acquire solidity. In the Highlands, mosses are so frequent, that it would be tedious to enumerate them. Their formation is uniformly owing to the same cause—fallen trees, the deciduous parts of heath, and of strong aquatic plants. The largest tract of moss, in a valley, any where in this county, and perhaps in Britain, is in Monteth, which has given its name to a whole stewardry. It is also called Moss-Flanders, from its flat appearance, and is most commonly known by that name. This whole tract of moss, from the bridge of Gartmore to the bridge of Drip, may be computed at 10,000 acres." As it has been frequently found that "a stratum of moss is buried several feet below the surface of soils, of the rich kind, with a variety of timber lying in it, the mode of its origin seems evident.

"If the soil below Moss-Flanders and the other moss in Strathearn, have been formed by the agitation of the sea, which is very probable; whenever the waters retired, such a luxuriant soil could not long remain unproductive. It must have been sown without delay, by the hand of nature, with the seeds of the plants growing around it. Of these, the oaks and other forest trees, being the most vigorous, would, in a few years, overtop and choke the rest. Time itself, and the violence of the winds, are sufficient to overturn any trees: and when trees are felled on flat land, where their leaves have been accumulating for ages, the leaves and branches dam the water; aquatic grasses grow; the place becomes a morass; and every morass composed of such substances, by acquiring solidity, becomes a moss. These are the outlines of the most probable opinion of the manner in which Moss-Flanders was generated. The roots

of oaks are found at this day, sitting in the very manner they grew, and adhering firmly to the clay and trunks of an immense size lying near the roots, at the depth of fifteen feet below the surface of this moss."

*Moss on Trees*, in *Rural Economy*, a distemper caused by the moss plant fixing itself upon them, which is highly prejudicial to the growth and increase of those both of the timber and fruit sorts, and which much damages the fruit of the latter kind.

The best remedy is the scraping it off from the body and large branches, by means of a kind of wooden knife that does not hurt the bark, or with a piece of rough hair-cloth, after soaking rain. But the most effectual cure is, the taking away the cause. This is to be done by draining off all the superfluous moisture from about the roots of the trees, and which may be greatly guarded against in the first planting of the trees, by not setting them too deep in the ground.

In cases where trees stand thick in a cold moist ground, they are always covered with moss; and the best way to remedy the fault is to thin them. When the young branches of trees are covered with a long and shaggy moss it utterly ruins them; and there is no way to prevent it, but that of rubbing it off, or cutting the branches away near the trunk, and even to take off the head of the tree, if necessary, when, if the cause be removed by thinning the plantation or draining the land, the young shoots continue clear afterwards.

This disease arises in consequence of the moss plant establishing itself upon the trees which are in an unhealthy state of growth, or which have been planted too closely together, by which proper circulation of air and dryness are prevented. Of course, the trees are not merely injured by the plants establishing themselves upon them, and hindering their growth, but probably also by the large proportion of moisture that is attracted and the dampness induced in consequence of it.

With the view of preventing and removing this affection, Mr. Forsyth advises the washing the trees with a mixture of fresh cow-dung, urine, and soap-suds, in order that the establishment of the moss plants may be prevented, and the bark be kept in a fine healthy condition. Where this disease proceeds from the unhealthy state of the trees in consequence of the unfriendly nature of the soil, Mr. Nichol thinks they should be removed as soon as possible, as this is the only certain way of guarding against their destruction.

Moss, in *Commerce*. Some kinds of mosses are used in medicine, in perfuming, &c.; among others, the *sea-moss*, called *coralline*, and the moss of cedar and fir, which enter the composition of Cyprus powder.

The moss of common trees, as oak, ash, poplar, &c. is used for caulking of vessels: it is also used by bird-merchants, to prepare cages for certain kinds of birds to hatch in.

The soft marsh and bog mosses serve the poor in many places for stuffing their beds; and in the business of transporting plants from other countries, nothing is of so great use as the stalks and leaves of these little vegetables; the succulent plants coming over in great beauty and vigour, when rolled up in dry moss; and the trees and shrubs, by having their roots covered with such as is somewhat moist.

The great quality of the mosses, which makes them so serviceable in this case, is, that they do not heat and ferment on being moistened, as hay and straw would.

Several species of the mosses and algæ have been applied to medicinal use. Thus, several of the mosses are great and valuable medicines, used as desiccatives and astringents; that the common cup-moss is one of the greatest remedies in the convulsive



convulsive coughs of children, called the chin-cough, is known to every one; and Dr. Mead has ennobled the grey ground-lichen, by publishing its virtues in one of the most terrible of all diseases, the bite of a mad-dog. The common green liverworts are known medicines in disorders of the breast, as are also all the species of polytricha. The seeds of our lycopodium are given with success in nephritic cases; and the Indians give one of their species in many distempers, and, as they say, with great benefit. The common white ground coralloides serves the rein-deer of Lapland for food, when all other herbage is lost; and the confervæ serve for food to many of the fish both of the sea and rivers, and to several water-fowl. And these, as well as the land mosses, afford shelter and habitation to many insects, and their young. Many of the species of coralloides and lichenoides are found of great use in that profitable branch of commerce, the art of dyeing; and doubtless many others have also the same qualities, though not yet discovered; and we may be guided in searches of this kind by observing that many of them tinge the papers between which they are dried with very beautiful and lasting colours.

Moss, *Silk*, in *Natural History*, a name given by count Marigli to a species of sea-moss, or coralline, of a very remarkable fineness and softness, much more resembling silk than any other of the marine productions. It is wholly composed of a sort of tuft of fine hairs or filaments, and is of a blueish-green colour, and almost transparent. It grows on rocks, stones, shells, or any thing else that lies in its way, and is found usually at small depths; it is not so tough and flexible as many other of the sea-plants, but is easily rubbed to powder between the fingers. When examined by the microscope, the single filaments do not appear of the same equable surface and uniform texture; but they are seen to be jointed and made up, as it were, of a great number of pieces fastened end by end to one another, in the manner of the beads of a lady's necklace. It is of a fine blueish-green, and perfectly transparent before the microscope, and resembles a string of gems, such as the aqua marina, or some other like stone.

Moss is also a name given in many parts of England to the ground called the bog, fen, marsh, or morals in other places.

Moss-Troopers, a rebellious sort of people in the North of England, that lived by robbery and rapine, not unlike the Tories of Ireland, the buccaneers in Jamaica, or banditti in Italy: the counties of Northumberland and Cumberland were charged with a yearly sum, and a command of men, to be appointed by the justices of peace, to apprehend and suppress them. Stat. 4 Jac. I. cap. 1. 13 & 14 Car. II. cap. 22. 30 Car. II. cap. 2. See 6 Geo. II. cap. 37.

Moss, ROBERT, in *Biography*, a learned English divine of the established church, was born at Gillingham, in Norfolk, in the year 1666. He received his classical education at the free school of Norwich, and in 1682 he was entered of Bennet college, Cambridge, where he took his degrees, and was elected into a vacant Norfolk fellowship in that house. When he commenced preacher his sermons made great impression, and he had full audiences whenever he was called to perform the duties of the pulpit. He offered himself as candidate for the office of public orator, and also for the mastership of his college, but was unsuccessful in both instances; it was, however, universally acknowledged that he lost no credit by these competitions. In 1698, he was appointed preacher to the Society of Grays-Inn, London, an office which he held through life. In the following year he was appointed preacher-assistant at

the church of St. James, Westminster, and was afterwards nominated chaplain in ordinary to king William III.: he continued to hold the same station under queen Anne, and being one of the chaplains in waiting when her majesty visited the university of Cambridge in 1705, he had the degree of doctor of divinity conferred upon him in the queen's presence. Soon after this an unsuccessful attempt was made to eject him from his fellowship, on account of non-residence. In the year 1712, Dr. Moss was nominated to the deanery of Ely, which led him to resign his fellowship of his own accord. Upon the accession of George I. Dr. Moss was sworn, a third time, chaplain in ordinary, which place he retained till 1718, when he was dismissed, on account of the part which he took in the Bangorian controversy. He died in 1729, in the sixty-third year of his age. He was author of a Collection of Sermons, published after his death, to which is prefixed a character of the author, which says, "He was of so open and generous a disposition, and such a stranger to all artificial disguise, that he affirmed, and you believed him; he promised, and you trusted him; you knew him, and you loved him." Biog. Brit. vol. vii.

Moss, in *Geography*, a town of Norway, in the province of Aggerhuus, on the E. side of Christiania bay; 28 miles S. of Christiania.—Alfo, a river of Norway, which runs into the sea near the town of Moss.

MOSSA, a town of Germany, in the county of Goritz; five miles S.W. of Goritz.—Alfo, a town of France, in the department of the Sesia; 23 miles N.N.W. of Vercelli.

MOSSALE, a town of the duchy of Parma; 19 miles S. of Parma.

MOSSAR, a town of Lithuania, in the palatinate of Wilna; 28 miles S.E. of Bressaw.

MOSSAW, a town of Bengal; seven miles N.E. of Rajemal.

MOSSEL BAY, a bay on the S.E. coast of Africa. The outermost point of the bay, called Cape Saint Blaize, lies in S. lat. 34° 10'. E. long. 22° 18'. The variation of the compass is 1797, was 27° 54' W. The time of high water at full and change about three o'clock, and the rise and fall of the tides six or seven feet. During the summer months, when the winds blow between E. and S., or directly into the bay, a heavy swell breaks upon the beach, which makes it dangerous, and frequently impracticable, for boats to land; but these winds are never so violent nor so lasting as at the Cape; and ships may ride at anchor in perfect security about three quarters of a mile from the landing-place. The S.W. winds, that frequently blow with great violence from April to September, bring into the bay a most tremendous sea, setting round Cape Saint Blaize. At this season of the year it would be highly imprudent for ships to enter into Mossel bay. A rill of water glides over the sandy beach, where is the best landing, and is easily conveyed into casks in the boats, by means of a hose. To the S.E. of this landing-place is another small cove tolerably sheltered, and deep enough to admit vessels of ten or twelve feet draught of water. At either of these coves, piers for landing and shipping of goods might conveniently be constructed, and at a small expence, as materials may be procured upon the spot. Boats, however, may land at every part of the bay; and the adjacent country would easily afford supplies for about 500 men. The mouths of the rivers that fall into the bay are generally blocked up with sand; they abound with various kinds of fish; and at the rocky parts of the coast muscles and excellent oysters are plentiful.

MOSSEL



MOSSEL Bay gives name to a division of the district of Zwellendam, adjoining to it; and it is sometimes called "Droogeveldt," or dry country, extending from the Gaunitz river to the Great Brakka river that falls into Mossel bay. The surface is hilly and composed of a light sandy soil, which, when the rains are favourable, is sufficiently fertile in corn. The only natural product in the vegetable kingdom, that is useful as an article of commerce, is the aloe; but the heathy plants along the southern are more favourable for sheep than in the other parts of this division. Besides the fisheries mentioned under the preceding article, the aloe and barilla might employ the Hottentots to advantage. As the former grows in every part of the district that surrounds the bay, that from the ashes of which the latter is procured is equally abundant in the plain through which the Olifant river flows at no great distance from the bay. Here also the cultivation of grain and pulse might be greatly extended. Barrow's Africa, vol. ii.

MOSSELPATTY, a town of the island of Ceylon; 65 miles N.W. of Trincomalee.

MOSSENIGA, a town of European Turkey, in the Morea; 20 miles E. of Navarr.

MOSSEQUEJOS, a people and country of Africa, on the coast of Zanguebar, on the banks of the Quilamanca, about 100 miles from the Indian sea.

MOSESSES, in *Botany*. See MUSCI, and FRINGE of Mosses.

MOSESSES, *Sea*. These marine substances are very beautiful when viewed by the naked eye; but when examined with the microscope, they afford a very pleasing variety of structure and conformation.

The common kinds afford a great variety of colouring, the different parts of the same substance often appearing, some brown, some yellow, some red, and some grey. On drying, these colours become less elegant; but on putting the dried substance again to soak in water, they are in some degree recovered, and the variations are usually found to be owing to the joints and knots in the stalks, which interrupt the course of the general colour, and are often themselves either black, or of a dark and deep brown. See CORALLINE.

MOSSIMPOUR, in *Geography*, a town of Hindoostan, in Bahar; 23 miles S.E. of Hajypour.

MOSSING of Fruit-Trees, in *Gardening*. See Moss on Trees.

MOSSO, in *Geography*, a town of France, in the department of the Sèze; two miles N. of Biella.

MOSSULA, or MORSOULA, a town of Africa, in the kingdom of Congo, at the mouth of the Onzo. S. lat. 8° 10'.

MOSSUMBO, a town of Congo; 20 miles S. of Banza.

MOSSY LAND, a common name given to boggy peaty grounds in many parts of the kingdom. These sorts of land consist of a turfy substance, below which is a black, moist, spongy earth, which rests on a clay or marly bottom. The dark coloured under strata of mosses, after being dug up with spades, somewhat in the form of bricks, and dried, is what is called peat, and which is used as fuel in several districts.

The most certain and shortest method for the improvement of moss land, if the ground be designed only for grafs, and its situation be such as admits of it, is this: first drain the moss, and if there be heath upon it, burn that off, and make the surface even. Then make a dam at the lowest part and a sluice, and work the water upon it through the winter. The mud which comes with the land-

flood will bring a fine sward upon it in two or three years, and be afterwards a yearly manure; so that it will bear annual cutting, and, besides, be good pasture for cattle, after the sward is become strong enough to bear them. But Mr. Græme found that the improvement of moss land may be endangered by draining it too much; for his crops were best where the surface of the water in the surrounding ditches was not above three feet lower than the level of the moss which composed it.

It may be observed, that the nature and origin of the soil of mosses has been lately much inquired into and examined by different writers. In the second volume of Communications to the Board of Agriculture, Mr. Headrick states, that "Dr. Anderson, in a late treatise, advances an opinion which appears to him somewhat paradoxical. He asserts, that moss is a vegetable, or congeries of vegetables, which are *growing*, or *living* below; while he distinguishes the top, where we frequently see vegetables actually growing, by the epithet of *dead moss*. Thus, according to him, there are two species of moss, *viz.* *quick moss*, from which peats are dug, on which no vegetables are ever known to grow, and in which no animals are ever known to exist; that this, before it is cut out of its natural situation, is composed of a congeries of growing, or living plants. 2. *Dead moss*, which frequently covers the former at the surface, on which heath and bog and coarse grasses are seen in a growing state, while insects and other animals frequently nestle in it." He conceives "the idea to have been suggested to the doctor by the vulgar dialect of some parts of the country where deep moss, fit for making peats, is often distinguished by the appellation of *quick moss*. But, he apprehends, that this term, in the vulgar dialect of Scotland, no where indicates life in the sense affixed to it by the doctor, and he knows of no term used among the vulgar that ascribes life to vegetables of any kind. By the term *quick*, when applied to mosses, he supposes they mean only to express their miring property, just as *quick sands* mean sands in which a passenger is in danger of sinking. *Dead moss*, he conceives to be synonymous with *firm moss*; those parts of peat-bogs which are covered with herbage being the only parts on which a passenger can walk when the moss is wet, as his feet are supported by the matted roots of plants." And that "whatever may be the strict meaning of these terms in common language, the doctor must admit that, according to his hypothesis, this vegetable, during the whole period of its growth, is excluded from the influence of sun and air. No vegetable he ever heard of forms ligneous fibres, or acquires inflammability, without contact of air and of the sun's rays during the period of its growth. Now, how comes it that a vegetable growing in such extraordinary circumstances, acquires the very high degree of inflammability ascribed to it by the doctor? Inflammability it cannot acquire from the action of the sun's rays, because it is soaked in water, and frequently covered with a thick coat of what the doctor calls *dead moss*. However ingenious, therefore, the hypothesis may be, this obstacle to its admission seems to him insurmountable." And further, "what seems decisive of the utter deadness, and partial dissolution of that species of moss to which the doctor imputes life and vegetation, is, that such moss emits light when kicked and tossed about in a very dark night. This is well known to those who live contiguous to peat-bogs, and is the cause of frequent terrors, which are ascribed to *Will-of-the-wisp*, &c. It is really owing to the slow inflammation of the ligneous or carbonic fibres, of which the moss is chiefly composed, in consequence of contact with atmospheric air in a moist state. No plant, as far as he



knows, is capable of spontaneous inflammation while it continues in a growing or living state; and most plants require all their mucilages, and other soluble parts, to be extracted by long soaking in water, before they are capable of exhibiting this phenomenon. If a piece of wood be well dried and seasoned, it cannot afterwards be rotted except very slowly; but if it be sunk in a green state, among moist earth, its soluble parts are extracted in the course of a few years. Its ligneous fibres become soft, and may be separated in every direction; each species of wood breaking in a way peculiar to itself, both laterally and perpendicularly, similar to the crystallization of salts. If this wood be suddenly exposed to the air, in a dark place, while moist, it will shine with great brilliancy; if it be dried, it will be found much more inflammable than fresh wood of the same species, which has been seasoned; as it consists almost wholly of carbon. The property of shining in the dark is common also to leaves of trees, and to all vegetables, whose carbonic fibres have been laid open in consequence of long soaking in moisture when they are first exposed to the action of atmospheric oxygen. By frequent repetition of soaking, and exposure to the air, such bodies become entirely calcined, and they leave an inflammable earth, such as is produced by burning them in a common fire. No living vegetable, however, and no vegetable whose solution is not pretty far advanced, is ever seen to undergo this spontaneous inflammation; but moss adapted for making peats certainly undergoes this process, and therefore such moss, instead of being alive, must be dead. This may help us to explain a fact, which is ably illustrated by Dr. Anderson, that moss, if frequently turned up to the air, and kept uniformly in a moist state, though not absolutely soaked, is gradually changed into a fertile soil. None of the succulent, or nutritious vegetables, are known to grow upon other vegetables, unless the putrefaction of the latter be pretty far advanced. Frequent turning of moss, in the given circumstances, exposes it to slow inflammation or putrefaction; both of these processes being of the same nature, which may also help to account for some facts which seem to have puzzled Dr. Anderson, as appears from his treatise; that oak, which is never found to rot when sunk in moist clay, or moisture of any kind, should be found reduced almost to a pulp in moss; but the doctor may observe that the oak found in moss was never seasoned; it fell where it grew, and was inclosed by moss with all its natural juices, while a vast quantity of additional juices, retained in the moss, soon invested it on every part. The trees in this situation were in time robbed of all mucilage and soluble parts, which became food for the moss plants that invested them; of course nothing at last remained but the carbon, or ligneous fibres, saturated with the moss juices. Though the cohesion of these fibres be destroyed, they are insoluble in water, and do not easily rot in it; in other words, they do not readily decompose water." But "another difficulty still occurs to the doctor. How come these ligneous fibres to retain their inflammability, or even to have it considerably increased? A few facts will be afterwards stated which may help to account for this; at present it is only necessary to observe, that wood will retain its inflammability a very long time, if buried green in any moist substance, which effectually excludes it from the action of the atmospheric air, provided it does not petrify, or change into stone. Its soluble parts may be extracted and diffused through the water; but they rather impede than increase the inflammable power of the wood. The ligneous fibres, however, remain, and are not rotted except by the joint action of air and moisture. It has often been observed, that the part of a stake fixed in the ground, which soonest rots,

is a ring from the surface downwards, which is between the wet and the dry; that is, the part which is exposed to the joint action of the earth's moisture and of atmospheric air. Now trees that are buried deep in the moss are soaked in perpetual moisture, but are excluded from the action of air; they cannot, therefore, be said to rot, though their parts should be softened, and their soluble mucilages be extracted and dissolved in the water; but any one who examines the large trees found at the bottom of mosses, must be convinced that they had undergone a partial rotting before they were completely covered by the moss. The upper part of these trees is uniformly flat, or cut out into hollows, while the under part retains its natural rotundity. This shews that after these trees had fallen, the under part was immediately invested or sunk in moss, while the upper part continued a long time between the wet and the dry, before the moss grew up and excluded the action of the air. If then the ligneous fibres of wood sunk into moss remain undecomposed, their being softened and reduced to a pulpy state by long maceration in water, affords no reason why they should lose their inflammability, but rather that this quality should be increased. Inflammability can only be lost in consequence of the carbon contained in a body having combined with oxygen; a combination which, in this situation, cannot take place; nor does there seem sufficient reason to conclude, that the plants, of which moss is composed, grow in a different manner from other plants, or that they require a high degree of inflammability without the action of the sun and air; a supposition which is contrary to universal experience. But, without entering into any controversy upon the subject, he may be allowed to state his own opinion, with the reasons on which it is founded. Far from laying claim to infallibility, the reader is requested to withhold his assent, unless the facts adduced may seem to him convincing."

It is first stated, that "there is one opinion in which he cordially agrees with Dr. Anderson, that moss grows or receives a gradual accumulation from vegetation. The only point in which he differs with him is, respecting the place where this vegetative accumulation is made: the doctor says it takes place below, while he apprehends it takes place at the surface." But "with regard to the general fact, that moss grows, many proofs are adduced by Dr. Anderson and other writers; and he will only superadd two which appear satisfactory. In a moss belonging to Robert Fulton, esq. of Hartfield, near Paisley, the people in casting peats came upon a causey formed of broad stones upon moss; this causey had been very substantially finished with stones brought from a distance in the Roman manner, and was probably constructed by them while they occupied a fortified camp at Paisley. Though it had been originally laid upon moss, a new covering of moss had grown over it, to the depth of several feet. There is a moss at Swindridge Muir, from which peats had been dug at some very remote period; the old pits from which the peats had been taken, are grown up to the level of the surrounding moss; but on leading up a main drain which passed through several of these holes, they were found to be filled with moss of a more soft and spongy texture than the old moss, which never had been dug. Indeed, the new moss nowhere coalesced with the old, the sides of the pits remaining perpendicular and entire. The new moss could not have been accumulated from any thing blown into the pits by the wind, as the whole surface of the surrounding mosses were covered with heath and coarse herbage; it must, therefore, have been caused by a new vegetation of moss in the holes from which the peats had been taken." And it is suggested, that "were



"were a naked rock suddenly thrown up from the sea, or from the bowels of the earth, the first plants which nature would place upon it would be the various species of lichens, and such as can subsist wholly upon what they imbibe from the air, without needing a soil in which to push their roots. These plants serve the double purpose of clothing the rock, and thus preventing the fine particles that are dissolved by air and moisture from being washed away, and, from their growth and dissolution, of accumulating vegetable soil for the sustenance of more succulent plants. The rock is thus gradually made to acquire such a depth of soil, that it becomes able to sustain, not only grasses and shrubs, but may become a receptacle for the oak itself. But, if we suppose this rock to be so situated, that moisture cannot easily run off from its surface, a great variety of the moss plants will begin to grow upon it. As these accumulate, the moisture will rise along with them; for they retain it like a sponge, and obstruct its passage from the rock. Thus, as long as the moss plants can accumulate moisture, they will continue to grow, until the rock comes to be covered with a deep moss." And "the same effect will be produced upon a bottom of gravel or lime-stone, which does not easily admit the moisture to pass through it. Upon a bottom of aluminous or pyritical schistus, none but the most hardy plants, such as those which compose mosses, can exist; and such plants will, therefore, accumulate upon such a soil if not checked, even though it should have a considerable declivity." It is added, that upon flat clay land, and in hollows that had been formerly covered with wood, we uniformly find mosses which have grown in consequence of the wood having been felled, or allowed to fall down. This is owing to the water having been obstructed by the trees, after they had been strewed upon the ground, and which, consequently, caused the production of aquatic plants. But such trees as we find in the bottom of mosses, being steeped in water, throw out a considerable portion of the tanning principle: this is of such a nature, that no other but the hardy moss plants can grow in a soil affected by it; such plants, therefore, rapidly grow in such situations, and accumulate as long as they can cause the moisture to rise as they rise. In the bottom of mosses that had been originally caused by the fall of woods, we find all those grasses and plants which commonly grow in woods in a state of preservation; we also find the leaves and other exuviae of the trees, which having been dropped during a course of ages, seem not only to have increased the dampness of the soil, but by their atringent juices to have predisposed the soil for the growth of moss plants; thus, the moss seems to have advanced a considerable way before the trees fell, and by the moisture which it retained, it seems to have chilled their roots, and rendered it easy for the winds to overthrow them."

And it is noticed farther, that "mosses in flat situations are generally highest in the centre, that being the point where the water finds most obstruction to its running off. The limit to the farther accumulation of these mosses is the point to which the water can be drawn up as the moss increases, and they have been known to grow until the column of water, sustained in the moss, has burst its barriers, and conveyed the moss that retained it over the neighbouring fields. Many examples of this might be specified, but he will only mention that of the Solway moss, the facts relative to which are well known to the public. To this cause also moss-hags are to be imputed, or those dangerous chasms which frequently occur in deep mosses: these are produced by a part of the moss shifting its position from the column of water sustained in it acquiring greater pressure than the lateral resistance. Thus moss may be considered as a fresh-

water sponge, which grows as long as it can draw up and sustain water to nourish it." From these facts it is concluded, that "the predisposing causes of the growth of moss appear to be an extreme degree of dampness, or of atringency in the soil, which render it an unfit receptacle for any other but the moss plants. He uniformly proceeds upon the supposition that the sperm, the seeds, or the suckers of the moss plants are at hand, where a soil is thus predisposed for their production; for it would be absurd to suppose, that these plants would begin to grow even in the most favourable situations, if there were neither seeds nor roots from which they were to spring. We are told, that in America and several other countries, peat-bogs are unknown: this he would account for in two ways; either the moss plants are there, but never accumulate into a bog from want of a proper receptacle: or supposing situations favourable for their accumulation, there are neither seeds nor plants of mosses to occupy these situations. We know not all the causes which induced the Supreme Being to diversify the productions of different climates; but we know that they are exceedingly diversified, and that this operates as a powerful motive upon remote nations to cultivate a friendly intercourse with each other."

The writer adds, that "the moss plants grow at the surface with their roots and stems immersed in moisture; but their leaves and branches are exposed to the air, and the sun's rays. Those mosses which discover no vegetation upon their surface, are either arrived at the utmost height at which they can sustain water, and have hence become dry, and are frequently blown about by the winds, or there are large spaces perpetually washed by the rains which fall, which are hence converted into water-courses. In such runs every new accumulation of moss is washed away, if what was formerly accumulated be not also carried off to a considerable depth. In flat places, where the moisture does not readily get off, the genuine moss plants may be seen growing somewhat similar to the green vegetation which arises in pure water, when exposed to the sun's rays. When a moss is intersected by numerous water-courses, it appears to be divided into islands, on which heath and coarse grasses, with lichens and other moss plants, are growing. When a moss has grown so high that it no longer retains a sufficiency of water to cause its further accumulation, the upper part, being between the wet and the dry, is partially rotted or decomposed into vegetable earth; hence the upper stratum of moss is never so inflammable as the parts below, having already, in some degree, suffered the slow inflammation which converts it into soil." And farther, "the moss plants seem almost wholly composed of carbonic fibres, and are so hardy that they continue to grow above, while their stems and roots are mouldering below. He has traced many of them to a considerable depth. Thus the yellow, or white fog, of which there are several varieties, is commonly fresh and vigorous at the surface; about a foot lower, it may exhibit marks of decomposition, though its organization remains entire. It may be frequently traced almost to the bottom of a deep moss, though its organization becomes constantly less distinct, until it is entirely lost. In the same way he has been able to trace the heath plant almost to the bottom of a peat moss; below it becomes soft, and is frequently bruised by the incumbent pressure, but its organization is seldom destroyed." And "the plants which compose mosses are doubtless exceedingly various. Botanists have enumerated more than 300 species of them, of the *cryptogamia* class; but it is probable that many species of these plants are invisible to the naked eye; and that there are many others, whose form and organization it is difficult to ascertain."



tain." But it is conceived, that "while the moss plants are growing at the surface, they are not rotting below: they are only steeped, or macerated in water, which extracts their soluble ingredients, and reduces them to a soft and pulpy state, in the same way as was mentioned respecting wood. As the water cannot get off, except by evaporation, in the lower parts, it is never changed, but the same water must continue for ever in the place which it occupies. Were it otherwise, that is, were the water frequently shifted, the moss would gradually rot, and moulder into earth: hence the effect of watering mosses, which, by accumulating vegetable mould, causes the moss to throw up sweet herbage." Dr. Anderson thinks, "that mosses could never accumulate to their present extent, by growing above, while they are rotting below: he thinks, that even an acre of the best grass could never accumulate hay sufficient to cover the surface on which it grew, to such a depth as many mosses have attained, by the residuum left after it was rotted. But it is well known, that by the rotting of hay, and other succulent vegetables, by far the greatest part of their substance is conveyed away in those gases which are emitted during the process, and there is nothing finally left but a light earth, together with some salts that are formed in the product. In moss no such rotting process takes place, for we never find that any of those gases emitted by rotting vegetables are emitted by moss; on the contrary, moss will preserve succulent vegetable, and even animal substances. It is said, that in the Ards moss, in Airshire, bodies of persons have been found by the people who were casting peats, which have remained in a perfect state of preservation ever since the persecution of the covenanted by Charles II. The covenanted frequently held their conventicles, or field-preachings, on the borders of this moss: when surprised by the king's troops, they fled into the centre of the moss, where cavalry could not pursue them. As these meetings were generally held in the night, it appears that some of these people had dropped into holes, where they could not afterwards be found. It is, therefore, evident that moss, so far from being itself in a state of putrefaction, is a styptic, whose juices are capable of preserving even those bodies which are naturally most liable to putrefaction; the two cases are, therefore, altogether dissimilar, and the argument inconclusive. But if we were to suppose the grass, like the moss plants, growing as thick as it could stand, and every season macerated, but not rotted, in water which fills up every interstice, it is apprehended it would soon accumulate, upon the soil that produced it, to a much greater depth than any now in existence; it may be further observed, that scarcely one-half of the densest moss is filled with vegetable matter. When peats are first cut out, they are nearly double the size they retain after they are dried; and when they are squeezed while wet, by a press, they go into a much smaller form."

The next question is, "how it comes that water only macerates the moss plants, that is, extracts their soluble ingredients, and destroys the adhesion of their parts, without rotting them, as happens with succulent plants? He apprehends this must be partly imputed to the hardy nature of the moss plants; for, being chiefly composed of lignous or carbonic fibres, the water does not readily act upon them, or, more properly, is not easily decomposed by them. Those plants are easiest rotted which abound most in mucilages, and parts that are-soluble in water; even mucilaginous plants do not easily rot, if they be wholly immersed in water, and excluded from the action of the air, which is precisely the situation of peat moss. But independent of this consideration, we shall see, that the water which resides in mosses

is impregnated with a portion of the tanning principle, which effectually prevents the rotting of the plants, in the proper sense of that word. Moss plants, therefore, are macerated, or infused like tea in water, but not rotted: the organic texture may be destroyed, and the soluble parts diffused in water, without suffering any chemical change: as the same water always resides in the moss, unless it be evaporated, there can be little or no loss of vegetable substance. As this maceration in water does not oxygenate the plants, it should, it is conceived, render them more inflammable than when in their organic state, as was suggested respecting wood."

It is stated, that "the trees and shrubs he has found at the bottom of mosses are the following, and they are, perhaps, the only indigenous trees and shrubs of this country. Of trees, 1, the oak; 2, the elm; 3, the birch; 4, the willow; 5, the alder; 6, the fir. Of shrubs, 1, the hazel; 2, the dwarf-willow; 3, the gall-plant; 4, the heath-plant: this last frequently continues to grow upon the moss during the whole period of its existence. The 2d and 3d shrubs also frequently continue growing upon mosses in the western parts of Scotland: they are very hardy shrubs, and seem to prefer those situations where their roots are immersed in the tanning principle, and the plants themselves abound in this principle. The shrubs which grow in mosses are always partially decomposed, if they have not entirely their organic form, when traced downwards to a certain depth; but he has also observed certain tubular roots, resembling large threads, which are evidently in a living state from the top to the bottom. These roots belong to plants which are growing at the surface, and which do not seem to decay below, with the mass of other plants. In the commencement of many mosses, it would appear that the falling of leaves and decayed branches, together with the undergrowth of shrubs and coarse grasses, had obstructed the water, and caused the moss plants to grow and advance before the trees fell down. The moss, by its retention of moisture, and by creeping up the stems, seems to have chilled the trees, and brought on their decay, before they fell down: thus we frequently find a considerable depth of moss below the trees, which are often broken over a considerable way above the root, and they generally lie in one direction, owing to the prevailing current of the winds having first bent and afterwards caused them to fall in that direction. Mr. Smith shewed the writer mosses, where oak and elm trees were lying near the bottom, and above them hazel and other shrubs had grown, which, in their turn, had been destroyed and closed round by moss." And, "as a proof that moss is composed of a congeries of plants, which had successively grown and decayed, though they had not rotted, we may observe, that it is always composed of thin layers, or strata, piled above each other, and the lower strata much more compressed than those above. This may be distinctly seen in many species of dried peat, and may also be observed in the face of a peat-bank, or wall, from which peat had been cut. The moss plants, therefore, seem to be more analogous to wood, than to any other species of plants: they are parasitical, and can grow either upon wood, or upon the wrecks and particles of their own substance. But so far from being in a state of putrefaction below, they will not grow in any soil where the putrefactive fermentation is excited."

In what respects the difference of moss, it is stated, that there are two species or kinds, *viz.* black moss, which is of a mahogany colour in its original state, but soon becomes black by exposure to the air; and whitish-yellow, or foggy moss, which is much less compact than the former, and retains



retains a white or yellow colour after it is dried: the latter does not seem in such a perfect state of maceration as the former, as the fog of which it is composed still retains its organized form; and there does not seem to be such a great variety of the moss plants present in this species of peat as in the black. The predisposing cause of these variations seems, in his opinion, to be either the soil or species of wood on which the moss at first commenced its growth, or the climate in which it is situated. Thus, mosses growing on fir woods are generally of the soft and spongy kind, and the trees themselves may be split into slices, which are used, in many parts of the country, in place of candles: mosses growing upon oaks, and other astringent trees, commonly produce a black and compact species of peat. Mosses in cold and elevated situations, as they grow very slowly, commonly produce a hard and compact peat. In this respect moss resembles wood, which is always hard and compact, in proportion to the coldness of the climate, or rather to the length of time it takes to grow; moss again, in low and warm situations, as it grows rapidly, is commonly soft and porous. These several causes often act separately, and often co-operate; and thus moss, considered as a soil, is found to possess the same varieties of quality which distinguish other soils." It is stated in conclusion, that "if these observations be well founded, it would appear that moss is not a plant which grows by a law peculiar to itself, and in direct opposition to the established laws of vegetation in other cases; but that it is a congeries of vegetables, of various species, which are adapted to grow in soils and situations where the more delicate succulent plants cannot subsist; that they are mostly of the parasitical kind, and grow either upon rocks and damp clays, where they receive little from the soil, or they can grow upon other plants, or even upon the particles that are formed from their own dissolution; that the predisposing causes of the growth of moss, are dampness and astringency in the soil; that while these plants are growing at the surface, they are dissolving below, not indeed by a process at all analogous to putrefaction, but by the simple diffusion of their parts in water, where they remain without any chemical change."

An analysis of the mossy material is afterwards given, but for which we must refer the reader to the paper itself.

It is concluded, however, "from a review of the whole of his analytical experiments; 1, that lime is the most powerful agent that can be employed for reducing mosses into soil. 2. That quick-lime is much more powerful than its carbonate in neutralizing the styptic juice of moss, because, being soluble in water, it insinuates itself through every pore of the plants, and while one part combines with the gallic acid, or styptic juice, the remainder unites with the mossy matter itself, forming it into an insoluble alkaline solution of moss, or soil of great fertility. 3. That during the action of lime and alkalies on mosses, gases are generated. From the 26th experiment it would seem, that these gases are not chemically combined with the moss, but, like the carbonic acid in yeast, are separable by pressure or agitation, and hence part of them at least remains in an active state, ready to promote the growth of plants. Indeed the same conclusion was inferred from examining the alkaline solution of moss, though in a much higher degree. 4. That it appears that alkalies are much better calculated than lime to dissolve the moss plants, and to generate gases in them beneficial to vegetation; but as they render the moss very soluble, and enlarge its volume, they produce no soil capable of sustaining the plants. The same observation is applicable, in part, to putrescent manures." But, "5, the author has

not ascertained the nature of the gases generated in the cases mentioned above. 6. The reasons will appear why mosses and other soils, in given circumstances, are more apt to produce one species of plants than others. 7. What is here detailed concerning the action of lime and of alkalies upon mosses, together with that of putrescent manures, is also applicable to the action of these substances upon other soils, in so far as they act upon vegetable matter." 8. The writer concludes by suggesting his "admiration at the beneficence of Providence, in having provided the moss plants for the situations in which they grow: they afford an immediate supply of fuel; are the source from which pit-coal derives its origin, though trees, and all the plants which abound in oils and carbon, also contribute to the supply of pit-coal. Were the places now occupied by mosses divested of vegetables, or stored with vegetables of a different character, they would become noisome fens, which, by the emission of putrid gases would spread all around them pestilence and death. Mosses emit no noxious gases; but rather, by growing at the surface, where the plants are acted upon by the sun's rays, they perpetually throw out oxygen, and thus contribute to the salubrity of the atmosphere. The only defect with which they are chargeable is, forming magazines of moisture, which by its exhalation generates cold, and spreads rheumatism and intermitting fevers among all the animals within its reach. The perpetual evaporation of this moisture not only tends to chill the moss, but it descends, in hoar frost and mildews, upon all the lands that are lower in point of situation. These last-mentioned disadvantages are more than amply compensated by the consideration that moss is not only an inexhaustible magazine of manure for other soils, but may be converted into a most fertile soil itself." And "after it is so converted, none of the defects already stated are any longer applicable to it."

In considering the methods most adapted to the improvement of mossy lands, in different cases and under different circumstances, several things are necessary to be regarded as they are met with in different situations and conditions, in different places.

In cases where the mossy land is of considerable extent, and of the more deep kinds, different modes have been in practice for bringing them into a state of cultivation. Some have attempted to remove the whole of the mossy substance by means of water, and a proper machine for the purpose, while others have had recourse to lime in large proportions with clay or sand, and other similar matters. Mr. Headrick has, however, remarked, that "mosses were considered solely applicable to the uses of fuel, until the late lord Kaims set on foot a project for floating away an extensive moss on his estate near Stirling. The project has been followed to a much greater extent by his son, who has constructed a bucket wheel, of great power, for raising water out of the Teath, to float the moss: the water is raised somewhat higher than the top of the moss, passes some hundred yards in hooped wooden pipes eighteen inches diameter under ground, and then emerges upon a raised embankment of earth, by which it is conveyed to the moss. It is stated by the author of the Report of Perthshire, that the expence of this machine and embankment was 1000*l.*, but the people on the spot informed Mr. Headrick that it cost 1500*l.* When the water arrives at the highest part of the moss, it is conveyed in a rut perpetually descending along the whole line of the uncleared moss; at every part of this line, the people are employed in throwing the moss into the stream with spades. Those at the part where the water first enters the moss, keep the stream upon the surface, and they lift and throw into it all the moss within their reach, until they uncover the clay below; they then cut



cut out a new water-course, and throw into it the embankment of moss which sustained the water before; those lower down operate in the same way, only they preserve the current of water on a lower level than those above them; those at the lowest part keep the water running upon the clay, and shift its course occasionally, so as to have it running along the bank, or face, of uncleared moss; thus, at every point along the water-course, people may be employed in heaving in pieces of moss by the spade, and they constantly shift the position of the stream, in proportion as the moss is cleared away." On this it is observed, that "the writer learnt that it required the labour of a man nearly a whole year to clear one Scotch acre of moss, and reduce it into a condition to receive a crop. This labour cannot be estimated at less than 25*l.*; to which, when the price of seed, compound interest upon the original erection of the machine and embankment, &c. is added, the expence of this mode of cultivation cannot appear trifling."

And further, that "the soil, after the moss is carried away, being a rich carse clay, mixed in many places with sea-shells, is first formed into ridges by the spade, and commonly yields a few good crops: laying it up in drills, during the first winter, by the spade, is found powerfully to increase its fertility. When it begins to lose its fertility, it receives a good dose of lime, and is afterwards manured with peat-ashes, and such putrescent manures as are accumulated on the spot." The writer adds, "he has heard that the farmers upon the banks of the Forth raised, at first, a great clamour against the improver for washing his moss into the river, as, when it was met by the tide, it was thrown out, and covered up their grass-lands upon the banks; but he was told, that they afterwards became very earnest to collect what he had thrown away; for the moss being washed and floated in this manner, is robbed of its styptic juice, and disposed to putrefaction; it of course makes excellent manure for carse lands, more especially if made into compost with lime and stable dung." Mr. Headrick conceives that "the whole of the plain, extending from Borrobtowness to Gartmore, has once been covered by the sea; and the soil is composed of clay washed down by the Forth from the mountains of micaceous schistus, where that river derives its origin. This washed clay has gradually filled up, and towards the ferry is perpetually filling up, the bed of the sea: the carse clay is here and there intersected by sand and gravel, and other friable soils (called there dry-field land), which have been washed down by the various streams that run into the Forth, and partake of the quality of the mountains from which they have been washed; but the mere filling up of the bed of the sea would never cause dry land to rise above its surface, and would only raise the water to a higher level." When the plain of the Forth is examined from its origin to its termination, or indeed any part of the island that is near the sea, it is sufficiently evident "that the sea has retreated into a lower level, by at least forty feet, than it formerly occupied; and that too, since the solid land was placed in its present position; which accounts for the mud formerly deposited in this arm of the sea now appearing solid land." However, "what chiefly deserves the attention of those who have an interest in this land is, that many parts of this carse clay are filled with oysters and other sea-shells, as he has observed them in many ditches, and frequently upon the surface. In some parts where a deep rut is cut by a rivulet, a deep bed of shells may be seen, which, taken in masses, is as rich in calcareous matter as the generality of lime-stone, and may be regarded as the material from which a future rock of lime-stone is to be consolidated. It is easy to select these shells from the mud, when they would be much richer than any

lime-stone." And as "lime is essentially necessary for this species of soil, and in many places difficult to be procured, on account of the distance from which it must be carried, and the badness of the roads, it would be very easy to supply its place, by burning the shells which here and there abound. Digging them would be much less expensive than quarrying lime-stone, and a slight heat would reduce them into very pure lime." Upon this principle it is conceived, "that it would be more profitable to search for these shells, burn them into lime by means of peats, and employ them in the cultivation of the mosses themselves, instead of being at the expence of floating them away. Besides these dead shells left by the sea, as the Forth and Teath abound in fresh water mussels; these might easily be bruised by a stone rolling on its edge, and being mixed with moss or earth afford an ample supply not only of calcareous, but also of putrescent manure. They ought to be completely rotted before they are applied, and blended with a large proportion of earth." And where clay marl could be procured, it would make an excellent dressing for the moss land after it is thrown into pasture. But "the mosses there have one advantage which seldom occurs, and which may have been the inducement to adopt this method. The soil, when got at, is excellent, being a rich carse clay, in many parts resting upon, or mixed with sea-shells. In most other places the bottom of mosses is either a solid rock, or a whitish granite, or pyritical gravel, or pyritical and aluminous clay." Which, after removing the moss from such places, are worse than before, as the bottom either does not admit of culture, or requires an expence far beyond its value in performing it.

In the Survey of Perthshire, it is stated, that this sort of land, when of "small extent, where there is a mixture of other earth, and the fall considerable, is generally pared and burnt, with profit; but if there be little or no fall, it may be planted with potatoes in lazy beds for a first crop, and the furrows left open for drains. With the first or second white crop, the seed of common grasses, which is always to be met with in meadow land, ought to be sown; which will yield a heavy crop of hay for some years, and afterwards a plentiful spring of strong coarse pasture, consisting mostly of the aquatic plants." And, that "where there is plenty of brush-wood, deep mosses, with a good fall, are most frequently drained and drawn in ridges like other land. The drains may be made with faggots, put in either longitudinally and sloping, having the slope of the truncheon always in the direction of the fall; or they may be laid transversely, in the shape of a St. Andrew's cross, and the land afterwards pared, burnt, and levelled." In these cases, "the spade for paring ought to be similar to that used in Scotland for casting turf, provincially the *slaughter-spade*; only a little more scooped in the iron, and rounder in the fore part, having a perpendicular knife, standing up at one side of the iron sole, to cut the sod, as the Highlanders have to the *lugged-spade*, which they frequently employ in casting peats in tough mosses."

It is also stated, that a practice similar to this of improving moss land, has been in use in Ayrshire, which is said to be borrowed originally from the practice in Ireland. The principal difference is, that the moss is directed to be *delved* or dug up with spades, and the manure to be chiefly lime. This is observed to be a method that is found by experience to be effectual. John Smith, esq. of Swinridge Muir, near Reith, in the above county, has been very successful in conducting this mode. In this method "the first thing to be done is to mark and cut proper master-drains, eight feet in width by four and a half in depth, declining to two and a half at the bottom: which drains cost in Ayrshire at the rate of one shilling



shilling *per* yard. In some instances it will be found necessary to cut these drains much deeper, and consequently at greater expence; and the drains are almost in every case so conducted, as to divide the field into regular inclosures, as well as to carry off the superfluous water. Then the ridges are marked off regularly, and in breadth six or seven yards; seven yards are preferable; which ridges are formed with the spade in the following manner: in the centre of each ridge, a space of about twenty inches is allowed to remain untouched; and on each side of that a furrow is opened, which is turned inward so as completely to cover that space, like what is called the *feering* of a gathered ridge. Thus begun, the work is continued by cutting with the spade, in breadth about twelve inches, and in length as may suit, till the whole be turned over, to appearance as with a plough, reaching back to the furrow that bounds the ridge. That furrow is a space about two feet, which is cut-out and cast on the sides of the ridges. The depth of this division-furrow ought to be regulated by circumstances, so as not to lay the ridge at first too dry by being raised in the crown, and at the same time so as to bleed the moss and conduct the water to the main drains. The next operation is to top-dress the ridges with lime, the quicker the better, at the rate of from four to eight chaldrons to the acre; five or six chaldrons being the ordinary quantity. He has even seen considerably more applied with effect. The field thus prepared is ready to receive the seed, which is sown in the season, whether dry or wet is a matter of indifference, and harrowed in with a small harrow, drawn by two men. Four men, with ease, will harrow at least five or six acres a-day; two and two by turns, drawing the harrow and breaking and dividing the mould with spades. But he would recommend planting potatoes, as preferable for a first crop, because oats for the first year frequently misgive. The potatoes are planted in what is called the lazy-bee way. The method is simple, and attended with little expence; and the moss is prepared for them in every respect and limed as before directed, for a first crop of oats. The beds are marked off across the ridges, in breadth from five to six feet, with intermediate alleys of about two feet as a furrow. The beds are covered over with a thin stratum of dung. The sets of potatoes are laid on the dung and covered from the intermediate furrows; which is followed with another covering, in all about four or five inches."

The planting of potatoes at first is not only considered as the most certain crop, but the most successful method at once of reclaiming the moss, not owing perhaps so much to the influence of the dung in aiding the fermentation already begun in the moss, by means of the lime, as to the effect of the potatoe crop in over-shadowing the ground, and causing a stagnation of air, which prevents the exhalation of moisture, and thereby accelerates the putrefaction and decomposition of the moss; and also to the effect produced by the roots in dividing the moss, separating its particles, and rendering it into mould. This practice is now followed in general, wherever dung can be commanded; and the produce is between forty and fifty bolls from the acre. When the potatoe crop is removed, the ridges are again put into proper form; which is done, not by throwing the manured surface into the trenches between the beds, but by making two or more cuts with a spade into the sides of the beds, which are pushed in opposite directions to close the lips of the trenches which have been made.

But "if potatoes are not planted as a first crop, the field is prepared for a second crop of oats, by cutting the furrows across the ridge and turning them over, and by cleaning out the division-furrows. To prepare for a third crop, the same

operation is performed. The most proper season to prepare the moss for a first crop is early in the preceding summer. In which case, the lime, aided by the heat, the harvest rains, and the winter's frost, has a powerful effect in promoting the process of putrefaction: consequently a mould is formed to receive the seed the ensuing spring. Although mention is made of the preceding summer as the proper season to prepare for a first crop, the common practice is to prepare for it in the course of the preceding winter; and to prepare for the crop of the second year as soon as convenient after the removal of the former crop.

It is suggested, that "the first year's crop is sometimes good, but very uncertain, because the lime has not had time to exert its influence. The second year's crop will run from five to ten bolls the acre. A first crop after potatoes is seldom less than ten bolls; sometimes considerably more from the acre. Early oats, the small Dutch or Polish oats, are sown as preferable. The grain produced is equal to any in the country. In general, four or five, or even six successive crops of oats are taken without any additional manure, and without any apparent signs of the soil being exhausted. On the contrary, the moss is now converted into a dark brown mould; and what alone renders it less productive of corn crops, is its running into sweet luxuriant grasses, the soft meadow grass, the dairy and white clover. Along with the fourth, fifth, or sixth crop of oats, grass seeds are sown, which in common produce an abundant crop of hay, and afterwards afford excellent pasture.

The moss is now considered to be in a permanent state of improvement; and if its own fodder be converted into manure, and applied to its own use, together with the occasional aid of lime, it will be for ever productive in potatoes and corn crops. In support of this opinion, a field of his has been in crop since the year 1783. When it began to run into grass, it was completely delved over, a fresh quantity of moss turned up, top-dressed anew with lime, and planted with potatoes in drills, and hand-hoed. After the potatoes, a crop of barley was taken, and followed by successive crops of oats; the last to be barley also with grass-seeds. The same rotation to be continued by way of experiment."

It is stated by Mr. Headrick, that "the expence of delving a moss for the first time, where the surface is tolerably smooth, is  $2\frac{1}{2}d.$  *per* fall, or  $1l.$   $13s.$   $4d.$  *per* Scotch acre; but where inequalities occur, which must be removed into hollows, by wheel-barrows running upon boards, the first expence is greater, according to circumstances. The second delving, where potatoes have not intervened, costs from  $1l.$  to  $1l.$   $6s.$  *per* Scotch acre, the division-furrows being at the same time cleaned out. The third delving and cleaning of the division-furrows cost  $1l.$  *per* acre; but the moss is now so friable, that it may be wrought with the greatest ease and rapidity. At the above rates, an ordinary workman will earn  $1s.$   $6d.$  *per* day; and an able and experienced one, from that to  $2s.$   $6d.$  *per* day. They use a strong spade edged with steel, and have always a grit-stone near them, for sharpening the spade. In the evenings they repair its edge upon a grind-stone, and when the steel is worn away, they lay it again with new steel. Sometimes the moss is so soft, that they walk upon boards while they are turning it over." And it is added, that "Mr. Smith has found by long experience, that it is improper to make the ridges too high or too narrow; when they are made too high, they throw the water off from their sides, without admitting it to penetrate their substance; the top of course gets too dry; when too narrow, there is a loss of surface from too many division-furrows; the breadth already mentioned is found to be the best;



best; and when the improvement is completed, the ridges appear like segments of wide circles, with a clean well defined division-furrow between each of them. The moisture is thus caused slowly to filtrate through the moss, rendered friable by lime, until it reaches the division-furrows and is discharged. As the moss subsides for some time, and closes in towards the furrows, it is generally necessary to clean these out before winter, and at the time the crop is sown until the moss acquires solidity." And further, that "some mosses may be ploughed, the second year, to within two bouts, or four slices, of the division-furrows; and every operation performed by the force of horses, except turning over with the spade the narrow stripes next to the division-furrows. In other mosses it requires three years before this can be done; and it seldom happens but every moss may be wrought wholly by the plough; after it has been wrought four years by the spade. When moss is wrought by the spade, it seems to be of no consequence whether it be wrought wet or dry; but when it is wrought by the plough, opportunities must be watched, as horses cannot walk upon it, for some years during wet weather."

With respect to "the quality of the potatoes thus produced upon mosses, the writer does not scruple to pronounce it most excellent. Potatoes have been tried with dung alone, but they were always watery, and frequently hollow or rotten in the heart; those raised upon mosses that have been well limed, are frequently so dry and farinaceous, that it is difficult to boil them without reducing them to powder; and they are often obliged to lift them with spoons; they come clean out of the ground, keep remarkably well in heaps covered over with moss in the field, and are remarkably well flavoured." Besides, "no such disease as the curl was ever known among moss potatoes;" and that if the opinion be true, that "the curl is caused by overloading the sets with too much earth, or from the earth becoming too hard around them, no such thing can take place in moss; but to whatever cause the curl may be owing, it is certainly propagated by diseased seed; it would, therefore, appear advantageous to transfer the potatoes raised upon moss as a seed for solid land. They have remarkably good species of potatoe in this district, which was brought from Virginia to Largs, about eight years ago; and whether it be owing to the beneficial nature of a mossy soil, or to its own intrinsic merits, this potatoe has long been so much distinguished by the good quality and large quantity of its produce, that it has superseded the use of every other species. There seems to be no occasion for moss improvers to change their seed. Some persons in this district, who have but small patches of moss, have kept them constantly in potatoes, more than ten years, without changing the seed, and that without any sensible diminution either in the quantity or quality of the crop."

It would seem from Mr. Headrick's paper, that in this sort of improvement much is owing to the great zeal and perseverance of Mr. Smith. And that "over all that county, the farmers and proprietors are busy in reclaiming moss. In Renfrew, Lanark, and Dumfriesshire, this practice has made considerable progress. Major Majoribanks and Mr. Pitlow have got workmen from Ayrshire, and have commenced moss improvements, upon a very extensive scale, in the neighbourhood of Bathgate. The culture of moss has become, in many cases, a distinct species of farming, to which individuals apply, to the neglect of every other pursuit." And "what may assist the inexperienced to form some idea of the value put upon moss by those who are acquainted with it, is, that a young man, son of a farmer on the estate of Swinridge Muir, has taken 20 acres

of moss from William Patrick, esq. of Trehorn, writer to the signet in Edinburgh for four crops, at 25s. *per acre* of yearly rent. All that was done by the proprietor was to dig the master drains, which also serve the purpose of fences; in other respects the moss was delivered in its wild and unsubdued state, the tenant being at all the expence of working and manures, and obliging himself to lime, at the rate of 10 Ayrshire chaldrons *per acre*. The moss was in crop in 1797, for the first time. The writer was several times upon it, and remarked, that where the lime had been early enough applied, which was the case with the greatest part of it, the crop (oats) was uncommonly good; even the worst was much better than some contiguous land which had been torn from Muir, and limed. On a small corner, which had got no lime, nothing grew. The proprietor himself expected no such rent, had it not been voluntarily offered by the tenant. The solid land there, which has been long in cultivation, does not average 20s. of rent, as the situation is not very accessible." And further, that "two small patches of cultivated moss, contiguous to the town of Reith, were lately set at the rate, the one of 10l. *per acre, per annum*, for two crops of potatoes; the other let for 7l. *per acre* for two crops of oats, to be sown down with grass seeds. The first of these patches had been constantly in potatoes ever since it was reduced to cultivation, and the occupants were to furnish what dung they chose for their crops, at their own expence. The second patch, of more than three acres, had been constantly either in potatoes, or oats, from the time of its first subjugation, and would have given much more, had potatoes been permitted; but it was thought advisable to bring it into grass. It must be admitted, that land immediately contiguous to a town, fetches a rent for convenience, as well as for what it actually produces; at the same time it must be observed, that the best solid land, to which these patches of moss belonged, and some of which had been long in pasture, brought only a rent of from 3l. to 6l. for two years' crops, the whole being let in parcels by public auction."

However, on minute examination, Mr. Headrick found in this district considerable variations in the practice of moss improvers, induced by different circumstances. Those who have large tracts of moss, and who are remote from markets, cannot afford to have so great a proportion in potatoes, as those who have only a small patch. They go over as much land as they can with lime, not having dung for the whole. They take crops of oats until the land gets foul, and then leave it to gather grass as it can. Such land never being cleaned, abounds in weeds among the natural pasture. Others, who have a small patch of moss, from four to six acres, have always a part of it in potatoes, with dung occasionally; another part in barley or oats, and another in cut grass. Many of these farmers never apply the plough to their mosses; for, though this may be done with safety, they say they have at least a third more crop with the spade than with the plough. After the moss is completely reduced, it is turned over with great ease, and they apply themselves to this work at intervals, either when the weather is so wet, or other circumstances occur, that they cannot work with their horses. As no plant yet tried contributes more to the improvement of moss than the potatoe, and as it also affords an opportunity of cleaning the land, those portions of moss on which it has been frequently repeated, are clean and fertile." In a word, some of the best land which he saw in this district was moss of an unknown depth.

In concluding the account of this interesting sort of improvement, the writer thinks, that "it would be an improvement



provement to roll moss occasionally during the progress of its cultivation. Dr. Anderson proposes to do this by a horse running upon planks, but he does not seem to advert that it would require more men to shift these planks, than would be sufficient to draw the roller in the way field-artillery are drawn." And that, "after a moss is laid down into pasture, it would contribute much to its fertility to lay it all over with a good dose of earth, tirrings of quarries, sand, or clay pulverized by lime, and then to roll it; this could be done in dry weather, when there is no danger of poaching, or breaking the sward." It is added, that "cattle of every kind should be kept from mosses, at first, during winter. This rule is also applicable to clay soils of every kind. Perhaps the best stock for pasturing on improved mosses would be sheep; but these have been banished from the improved moss districts, on account of the injury they do to young planting and hedges." It is further remarked, that "he saw several mosses which were blistery, and naked of herbage, after they were thrown into pasture, on account of springs issuing from the out-crop of rocks that terminated below them. These may be cured by bored drains, and by no other method."

The same writer states, that "hedges thrive remarkably well upon moss land, where a bank is thrown up, and lime is previously wrought and mixed among the moss in the thorn-bed; but in that district, with few exceptions, they plant hedges, and then abandon them to their fate: being seldom or never weeded, the grass and other plants soon overtop the hedge, and it never becomes a fence." It is supposed that in extensive mosses, fences may be made out of the moss itself. Suppose, in place of one master-drain, to divide two fields, two drains were made, with an interval of ten or twelve feet betwixt them, and all that was taken out of each drain built up upon the surface of this interval; it would form a rampart, which no animal would attempt to pass. As the cultivation of the moss went on, its surface would sink, and then it would be necessary to deepen the master-drains, still throwing what was taken out of them upon the top of the rampart. As no animal could see beyond this rampart, it never would attempt to cross, or get over it.

And in this district, "they have also roads running through the mosses, generally along the side of a master-drain, and cut off from the contiguous field by a small rut on the other side. These are generally too narrow, but they serve the purpose of conveying lime, &c. in dry weather, and of taking away the crop. Were the cultivation of an extensive flow moss attempted, he sees no other practicable plan but making very broad roads, drained to a great depth on each side, and laid with stone in the centre. This might intersect an extensive range of fields on each side, secured by the ramparts he has mentioned, and serve to convey lime, dung, &c. and take away the crop. At first it would be necessary to carry the corn-crop to the road upon hand-barrows; unless it were stacked upon the field, and taken away during frost. Potatoes, except such a portion as may be wanted for immediate use, are best preserved upon the field, in heaps, covered with moss, and can be removed during frost. After land of this kind is sufficiently limed, and wrought during a number of years, it collapses so much, and becomes so solid, that it can endure cartage almost at any time of the year."

**Mossy Soil**, that sort of soil which is principally constituted of peaty matters. See **SOIL**.

**MOST**, or **BRIEX**, in *Geography*, a town of Bohemia, in the circle of Saatz, on the Bila, containing three cloisters; 12 miles N. of Saatz. N. lat.  $50^{\circ} 30'$ . E. long.  $13^{\circ} 40'$ .

VOL. XXIV.

**MOSTAGAN**, a town of Algiers; 50 miles E.N.E. of Oran. See **MUSTYGANNIM**.

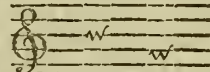
**MOSTAR**, a sea-port town of European Turkey, in Dalmatia, on the Narent; the harbour of which was constructed by the Romans; 60 miles N. of Ragufa. N. lat.  $44^{\circ}$ . E. long.  $18^{\circ} 0'$ .

**MOSTIL**, an island of Russia, in the Penzinskoe sea. N. lat.  $60^{\circ} 21'$ . E. long.  $155^{\circ} 14'$ .

**MOSTOLOS**, a town of Spain, in New Castile; eight miles W.S.W. of Madrid.

**MOSTRA**, Ital. in *Music*, is a character or sign, placed at the end of the staff of five tones, equivalent to an *index*, or character, to point out the notes which begin the next

line. Its form is the following:



**MOSTY**, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek; 40 miles W. of Novogrodek.

**MOSUL**, a large and handsome city of Asiatic Turkey, supposed to be the ancient *Nineveh*, in the province of Diarbekir, situated in a plain on the W. bank of the Tigris, which is here deep and rapid, and crossed by a bridge of boats; surrounded with walls and ditches, and defended by a castle. This city contains good buildings, exclusively of the hummums, mosques, and minarets, which are all built of hewn stone. The air is healthy in spring, hot in summer, feverish in autumn, and unpleasantly cold in winter. The town is very populous, comprehending men of all religions; but the Kurds form a majority of the inhabitants. The bazar is large and well supplied; and most of the articles, except clothing, are had at a moderate price. Here are various manufactories, in some of which they excel the Europeans. Their saddles, and trappings for horses, in particular, are very elegant. They also make carpets of silk, with flowers wrought in them, which seem to vie with the best of our manufactures. They are also very dextrous in making edgings and trimmings of various kinds, both for men and women; their manufactories in iron and copper too are very numerous. The town is surrounded by a strong and high wall, built with hewn-stone. The space within the wall is not entirely occupied with houses, many places being covered with ruins, which extend to a great distance on the banks of the river, and which prove that this place has formerly been much more extensive and populous than it is at present. Merchandise from India is brought hither by way of Bassora, and European goods by the way of Aleppo. N. lat.  $36^{\circ} 20'$ . E. long.  $42^{\circ} 8'$ . Jackson's Journey from India.

**MOSUNDAH**, a town of Bengal; 18 miles N.N.E. of Calcutta.

**MOSYNÆCUM**, *Æs*, in *Metallurgy*, a name given by the ancients to a white metal made of copper, in great esteem among them.

Aristotle tells us, that it was extremely bright, and of a perfect fine white colour; and adds that it was made of copper by melting it with an admixture of a peculiar kind of earth. Strabo also mentions this; and Theopompus tells us, that it was made of copper and an earth, and that it looked so like silver, that it was called *pseudo-argyron*.

Virgil mentions it under the name of *aurichalcum album*, and seems to give it great praises. We are not able at present to say what it was they used in making it. We know several things that will render copper white, as arsenic, and the like; but none of these can well be supposed to be the thing. For arsenic, and all the things we use to make our factitious metal, debase the copper, and render it brittle; whereas, by the accounts of Strabo, and others, their

It is

white



white metal seems to have been better for all uses than the copper itself. As to their telling us that it was a sort of earth which they used on this occasion, very little regard is to be paid to the terms; for they had an inaccuracy in speaking that leaves us much in the dark, in many other things besides this. They call the *calaminaris* stone, which is an ore of zinc, by the name of *Cadmian* earth, in their description of the manner of making brads.

It has seemed absurd to some to call this white metal *aurichalcum album*, because they supposed the word *aurichalcum* to signify gold-coloured copper; but this is an error. The *aurichalcum* is but a false spelling of *orichalcum*.

MOSZEISK, in *Geography*, a town of Austrian Poland, in Galicia; 15 miles E. of Lemberg.

MOSZLICKZKO, a town of Austrian Poland, in Galicia; 32 miles W. of Lemberg.

MOSZNO, a town of Russian Poland, in the palatinate of Kiev; 85 miles S.S.E. of Kiev.

MOSZOW, a town of Poland, in the palatinate of Braclaw; 70 miles E. of Braclaw.

MOT, or MOD, in the Phœnician *Cosmogony*, denoted either a slime, or rather an aqueous mixture, which was the seminal principle of all the creatures, and the generation of the universe.

MOTA, LA, in *Geography*, a town of Spain, in New Castile; 35 miles S. of Huete.—Also, a town of Spain, in the province of Leon; 20 miles W.S.W. of Valladolid.

MOTACILLA, the wagtail, and the warbler, in *Ornithology*, a genus of birds of the order Passeres. Though differing considerably in their manners, these birds are ranked by Gmelin under one genus, of which he enumerates nearly two hundred species. The generic character is: bill subulate, straight; the mandibles nearly equal; nostrils suboval; tongue lacerate at the end.

Of the *wagtails*, it is observed that their movements are extremely alert, and that their tails are perpendicularly long, which they perpetually jerk up and down. Their progressive motion is by running rather than springing. They rarely perch on trees. Their flight is waving, and accompanied with a tittering sound, and their food consists of flies and other small insects, in pursuit of which they will often follow the husbandman with his plough, and the movements of flocks of sheep. The *warblers* are composed of a great variety of birds, differing in many striking particularities of habit as well as in size. They are found in almost all parts of the world, perch on trees, move by leaping, and rarely utter any sounds during their flight. They are more numerous than any genus of birds, and abound principally in the warm latitudes of the globe, where insects, their food, are found in never-failing supplies.

#### Species.

\* *LUSCINA*, the Nightingale, of which three varieties are given: the specific character of the first is, rufous-ash; beneath white-ash; tail-feathers rufous brown; bracelets cinereous. In the second the body is something larger; and in the third the body is entirely white. The nightingale is somewhat larger than a hedge-sparrow, which is known to every one, and on the upper part of its body it is of a rusty brown. It inhabits, in its several varieties, Europe, Asia, and Africa, and is, of all birds, most famed for its song, which is we apprehend, in this country at least, more on account of the time in which it is heard, than in respect to the exquisiteness of its notes. It visits England in the beginning of May, sometimes sooner, if the weather be mild and favourable, and leaves it in autumn: it frequents thick hedges; evades the sight as much

as possible; sings late in the evening, and particularly during the time that the hen is hatching; breeds three or four times in the year, and lays four or five eggs, which are of a greenish-brown colour: it feeds on the larvæ of insects. It is characterized by Gmelin as having a brown bill; head and back pale mouse colour, with olive spots; tail red-mouse colour; legs and quill-feathers brown-ash, the latter chestnut on the outer edge. It is common in several parts of our own island, but is rarely heard in the northern parts of it, or even as far as Yorkshire, nor indeed so far west as Cornwall or Devonshire. It is not at all uncommon on the hills of Hampstead and Highgate, though we suspect not often heard so near the metropolis on the other sides of it. The males are said to arrive about a week before the females. Their winter residence has not been ascertained with any degree of precision; but is supposed to be in Asia, in various parts of which they are found, and are very highly prized, on account of their powers of melody. This is said to be particularly the case in Japan and Aleppo. In the latter place they are kept tame, and even hired out to give vivacity and harmony to almost every festival and entertainment. In Persia the nightingale sings in great perfection, and it is mentioned by a traveller in that country as the "sweet harbinger of the light: the constant cheerer of the groves of Persia, charming, with its warbling strains, the heaviest soul into a pleasing extacy." Another author describes the nightingale as beginning its song with a slow and timid voice, and, by degrees, opening his sound and swelling it, till it bursts with loud and vivid flashes; and he adds, "it flows with smooth volubility; it faints and murmurs; it shakes with rapid and violent articulations. The soft breathings of love and joy are poured from the inmost soul, and every heart melts with delicious languor; pauses occasionally occur, to prevent satiety, and give dignity and elevation; the mild silence of evening heightens the general effect, and no rival interrupts the happy and interesting scene." Nightingales build in low and close bushes. The female sustains the undivided fatigue of incubation, while the male at a distance enlivens her with his fine strains. They are never seen in flocks, even of a very small number. If caught they may even here be induced to sing in confinement; and will continue their song several months in the year.

*CÆLIDRIS*; Hang-nest Warbler; so denominated from its building a hanging nest. It is the size of a robin, and is found chiefly in the island of Jamaica. Its specific character is; above greenish-brown, beneath tawny; has an ocular line, and one beneath black. The bill is blackish: lateral tail and quill-feathers within rufous; temples orange; wing-coverts edged with yellowish; legs blackish.

*PALMARUM*; Palm Warbler. Brown, beneath dirty yellowish-white; belly yellowish; rump olive; two outermost tail-feathers with a white band near the tip. It inhabits the island of St. Domingo; is about five inches long; feeds on seeds and fruits, has a fine note, and builds among palm trees, whence it derives its specific name.

*BONARIENSIS*; White-chinned Warbler. Black; throat and flanks ferruginous; face, chin, middle of the belly, and outermost tail-feathers white. It inhabits Bonaria: the bill is blackish; the hind claw large.

*BANANIVORA*; Banana Warbler. Black-grey, beneath yellowish; arm-pits yellowish; vent varied with yellow and grey; chin cinereous; tip of the tail-feathers, spot on the wings and eye-brows white; lores black. It inhabits St. Domingo, is about three inches and a half long, feeds on seeds, insects, and fruits, particularly on bananas.

*VERMIVORA*; Worm-eating Warbler. Olive colour; head,



head, throat, and breast tawny; ocular band and arch over the eyes black; over the eyes a yellowish line, vent cinereous. It is found in Pennsylvania, and is of the size of a common hedge-sparrow of this country: the bill is black, beneath flesh-colour; and the legs are of the same colour.

**MADAGASCARENSIS**; Madagascar Warbler. The name indicates the abode of the species: it is more than six inches long; of an olive brown; head rufous; chin white; breast reddish; belly brown-rufous. Bill and legs brown.

\* **MODULARIS**; Hedge-Sparrow, or Hedge-Warbler. Above grey-brown; wing-coverts tipped with white; breast blueish-ash. The bill is blackish; cheeks striped with white; feathers of the back and wing-coverts edged with chestnut; wings and tail dusky; rump greenish-brown; chin and breast cinereous; belly whitish; vent yellowish; legs flesh-coloured. It is nearly six inches in length. It inhabits this country and various other parts of Europe, and is one of the few of the warbler tribe that remains with us the whole year. It has a pleasing and plaintive song, which it begins with the year, if the weather is mild; breeds early, making in the month of March a nest composed of green-moss and wool, and lined with hair, which is placed in some low bush, or evergreen shrub, and sometimes in faggot-piles, or in mere bundles of pea-sticks. The female lays four or five blue eggs. For want of insects and worms, which in severe weather are rarely to be met with, the hedge-sparrow will pick up crumbs of bread, and seems to prefer situations near the habitations of man. The cuckoo frequently makes choice of this bird's nest for the purpose of depositing its egg.

**JUNCORUM**; Rush Warbler. Brown, beneath paler; tail somewhat forked. It inhabits Virginia and Carolina, and is less than the last.

**AQUATICA**; Aquatic Warbler. Above pale rufous, spotted with brown; throat and breast reddish, belly and rump whitish. It inhabits Italy, and is migratory. It has a spot above the outer corner of the eye, and band at the base of the wing white; its tail-feathers are pointed.

**SCHENOBANUS**; Reed Warbler. Testaceous-brown, beneath pale testaceous; head spotted. It is found in marshy places, and in woods in many parts of Europe; it is very tame, and sings through the whole winter. The bill is blackish; quill-feathers brown, edged with rufous; tail is brown, and the legs are whitish.

**CAMPESTRIS**. Brown; head greenish-ash; tail the colour of the body; belly whitish. This is called the simple warbler. It inhabits Jamaica; is the size of a hedge-sparrow. The bill is black; the neck is greenish-ash; body beneath brownish-white, legs brown.

**MACROURA**; Green-tailed Warbler. Brown, beneath whitish-yellow, spotted with black; eye-brows white; tail wedged and long. It is found at the Cape of Good Hope, and is six inches long.

**LONGICAUDA**; Long-tailed Warbler. Olive; crown reddish; quill-feathers olive-brown; tail-feathers long, narrow, the middle ones longer. It inhabits China, is tame, and has a fine note.

**CURUCCA**; Babbling Warbler. Above brown, beneath whitish; tail-feathers brown, the outmost white on the thinner edge. It builds in hedges, and lays from three to five eggs. The bill of this species is blackish; crown and streak beneath the eyes cinereous; wing-coverts on the inner edge white, outer edge rufous-grey; tail-feathers edged with grey; legs brown.

**PASSERINA**; Passerine Warbler. Cinereous, beneath grey-white; eye-brows whitish, wings and tail black. It

inhabits France and Italy; has a simple note, and lays four whitish eggs spotted with green.

\* **HIPPOLAIS**; Lesser Petty-chaps. Greenish-ash, beneath yellowish; belly whitish; limbs brown, eye-brows whitish. It is found in England and other parts of Europe; is larger than a linnet, builds under beams, or in a low shrub; eggs white, with small red spots. The upper mandible is black, the lower blueish; inside of the mouth red; above and beneath the eyes there is a yellowish line; the quill and tail-feathers are of a mouse colour, edged with greenish, the shafts black; lower wing-coverts yellow; belly silvery. It has often been confounded with the yellow wren and wood-wren. It is the first of the many warblers that visits us in the spring, being heard early in April, and sometimes sooner than this. Its song consists of only two notes, which seems to express *chip, chop*. It is busy and restless, always active among the trees and bushes, in search of insects. The nest is oval, with a small hole near the top, composed externally of dry leaves and coarse dry grass, and lined with feathers. For the most part, it is placed on or near the ground, frequently on the bank of a ditch, or in a tuft of grass or low bush. The eggs are five or six, white, speckled with purplish-red at the larger end only, with a few specks on the sides. Its note is heard long after the yellow-wren is silent; and it remains with us not unfrequently till the latter end of October.

\* **SYLVATICA**; Wood-wren. Above olive-green; throat and cheeks yellow; belly and vent of a fine silvery hue; tail-feathers brown, and, excepting the first, they are green on the outer webs, and white on the inner. The bill is of a horn colour; irides hazel; breast pale yellow; a yellow line through the eye; tail somewhat forked, and brown; the under part of the shoulder is of a bright yellow; the legs are of a horn colour. It inhabits England; frequents woods, and searches about trees for insects. It is very like the yellow-wren, and has not been much noticed as a distinct species, though it is not at all uncommon. It is partial to oak and beech-woods, where it may be observed by the singularity of its note, expressive of the word *twice* drawn out to some length, and repeated five or six times in succession, delivered in a hurried manner, and accompanied with the shaking of the wings. It makes an oval nest, with a small hole near the top, is constructed of dry grass, a few dead leaves, and a little moss, and is lined with finer grass and hair. It lays six eggs, which are white, and sprinkled with purplish spots.

\* **HORTENSIS**; Petty-chaps, or greater Petty-chaps. Grey-brown above, white beneath; eye-brows whitish; quill-feathers brown-ash, edged with grey, the outmost on the outer web, and near the tip of the inner, whitish: the bill is blackish; lateral tail-feathers edged with grey-brown; the legs are also brown. Gmelin says it is found in France and Italy, chiefly in gardens, whence it derives its specific name; but other naturalists tell us, it is to be met with in the summer, in some of the southern counties of England, and even as far north as Lancashire. It frequents thick hedges, in which it builds its nest of goose-grass, and other fibrous plants, covering it on the outside with green moss. It lays four eggs, of a dirty white blotched with brown. The song of this species is little inferior to that of the nightingale; some of its notes are not much unlike the black-bird's whistle; but in a more hurried cadence. It frequently sings after sun-set.

**RUFUS**; Rufous Warbler. It is rufous-grey, beneath white; eye-brows white. Inhabits France and Germany, is four inches long, and lays five greenish white eggs, with dusky spots.



## MOTACILLA.

\* **SALICARIA**; Sedge Warbler. Cinereous, beneath white; eye-brows white. It is found in many parts of Europe in sedgy places; it sings in the night, and imitates the notes of other birds; the eggs are whitish varied with brown. It comes to us in April, and leaves again in September. Its notes partake of those of the sky-lark and swallow, as well as of the chatter of the house-sparrow. It builds among reeds and rushes, sometimes on the trunk of a low willow. The song of this species of warbler has sometimes been ascribed to the reed-bunting, a mistake which has originated from the circumstance of both species breeding in the same places, and the reed-bunting being conspicuous on the upper branches of a tree, while the warbler, concealed in the thickest part, is heard aloud. It has been remarked, that if it be silent, a stone thrown into the bush will cause it to sing immediately, and that it will also sing during a moon-light night.

\* **SYLVIA**; White Throat. Cinereous above, white beneath; first tail-feathers longitudinally half white, the second tipped with white; bill black, white at the base; head brownish-ash; back reddish. The female has a snow-white breast and belly. There is a variety which is thus described; reddish-ash above, and reddish-white beneath, with the throat white; the outmost tail-feathers on the upper part of the inner side, and the whole of the outer side white. It is very common in the enclosed parts of our own country, and likewise in other parts of Europe. It arrives here about the middle of April, and enlivens the hedges with its song, when it erects its feathers on the crown of the head. It builds its nest in some low bush, among nettles or other luxuriantly growing plants. It feeds on insects and berries, and frequents our gardens in the summer, for the sake of cherries and currants.

\* **SYLVIELLA**; Lesser White Throat. Brown-ash, beneath dirty-white; two middle tail-feathers shorter, subulate. Is common in the hedges of England; builds in low shrubs; the eggs are white, spotted with brown. It has a shrill whistling note.

**PICEDULA**; Epicurean Warbler. Brownish, beneath white; breast spotted with cinereous. It is found in several countries of Europe, and its flesh is reckoned very delicious.

**NÆVIA**; Fig-eater. Reddish-brown, varied with yellowish and cinereous, beneath white; breast yellowish, spotted with black; quill and tail-feathers blackish, edged with white. It is found in Italy, and feeds on grapes. The bill is of a chefnut colour; the legs are reddish, and the claws black.

**PATAGONICA**; Patagonian Warbler. This species, which takes its name from the country in which it is found, is cinereous; chin, throat, eye-brows, and outmost tail-feathers white; wings varied with brownish, the coverts with a brownish band; quill-feathers edged with brown. It feeds on sea-worms and shell-fish. The bill is black; the body is streaked with white; the legs are black, and the hind claw very long.

\* **PROVINCIALIS**; Dartford Warbler. Chefnut, beneath ferruginous, middle of the belly, edge of the quill-feathers, spurious wings, and outer side of the outmost tail-feathers white; eye-brows red. It inhabits Europe, and is about five inches long. The bill is black; irides scarlet; tail black, as long as the body; legs yellow.

**AFRICANA**; African Warbler. Black; the feathers edged with rufous-grey, beneath whitish rufous; crown rufous spotted with blackish; each side the chin a longitudinal black streak; quill with four middle tail-feathers brown, edged with rufous colour. It is found at the Cape

of Good Hope. Bill horn colour; tail slightly wedged; eggs grey-brown.

**NOVÆBORACENSIS**; New York Warbler. Varied with cinereous brown, beneath yellowish, streaked with black, eye-brows white. This, as its name imports, inhabits New York; it is likewise found in Louisiana. Its bill is black, and legs of a pale chefnut.

**UMBERIA**; Umbrose Warbler. Found also in Louisiana. Grey-brown, beneath white, with a few black spots, back with dusky spots; rump yellowish; wing-coverts, tail-feathers, and upper coverts black, edged with white. The bill is black, greater quill-feathers and legs blackish.

**FLAVICOLIS**; Yellow-throated Warbler. Grey, beneath white; throat pale yellow; front, eye-brows, and sides of the neck black; wings with a double white band. This is an American species, and may be found in Carolina. The tail-feathers are black, the lateral ones white on the inner side; bill black with a yellow spot on each side the base; legs brown.

**TRICHIAS**; Orange-thighed Warbler. Olive, beneath white; head with a transverse white bar; thighs and vent orange. This is found in Louisiana.

**RUFICAUDA**; Rufous-tailed Warbler. Brown, beneath white; back inclining to the rufous; edge of the quill-feathers, wing-coverts, and tail rufous; chin white spotted with black, breast pale brown. It inhabits Cayenne.

**FUSCICOLLIS**; Yellow-bellied Warbler. Greenish-brown; breast and belly yellow; tail greenish; wing-coverts and quill-feathers brown, edged with pale rufous. This is found likewise in Cayenne, and is of the size of a humming-bird.

**CÆRULESCENS**; Blue-grey Warbler. It is, as its name points out, of a blue-grey colour, beneath whitish; chin black; wing-coverts and quill-feathers brown; the former with a white spot, the latter edged with blue-grey. It is found in the island of St. Domingo.

**AMERICANA**; Blue-grey Warbler. Throat and breast yellow; belly and tips of the wing-coverts white, tail pale at the tip. Is found in many parts of the American continent.

**PENSILIS**; Pensile Warbler. Grey, yellow beneath; belly and eye-brows white; lores spotted with yellow; wing-coverts with alternate white and black bands. Nearly five inches long. Inhabits St. Domingo, and some of the West India islands, where it feeds chiefly on insects and fruits; and has a very delicate song, which is continued throughout the year. "The sagacity displayed by this bird," says Mr. Bingley, "in building and placing its nest, is truly remarkable. She does not fix it at the forking of the branches, as is usual with most other birds, but suspends it to binders hanging from the netting, which she forms from tree to tree, especially those which fall from branches that hang over the rivers and deep ravines. The nest consists of dry blades of grass, the ribs of leaves, and exceedingly small roots, interwoven with the greatest art; it is fastened on, or rather it is worked into, the pendent strings. It is in fact a small bed rolled into a ball, so thick and compacted as to exclude the rain; and it rocks in the wind without receiving any harm. But the elements are not the only enemies against which this bird has to struggle; with wonderful sagacity it provides for the protection of its nest from other accidents. The opening is not made on the top or side of the nest, but at the bottom: nor is the entrance direct. After the bird has made its way into the vestibule, it must pass over a kind of partition, and through another aperture, before it ascends into the abode of its family. This lodgment is round and soft, being lined with a



## MOTACILLA.

species of lichen, which grows on the trees, or with the silky down of plants."

**ALBA**; White-water Wagtail. Breast black; two lateral tail-feathers obliquely half white; bill, hind head, nape, throat, and legs black; front, orbits, sides of the neck, and belly white; body cinereous above; greater quill-feathers blackish; secondary, and wing-coverts dusky, and edged with grey; middle tail-feathers black, and edged with grey. Female with the crown brown; length seven inches and a half. This species inhabits almost every where; is a very active bird, and continually in motion, running after flies. In this country, as the weather becomes severe, it is apt to haunt marshes that are subject to the flow of the tide. Early in spring they return to their usual summer situation; and from the number which are sometimes seen together at this time attending sheep-folds and newly ploughed fields, we may presume that they are gregarious in their flights. In the breeding season they seem to prefer pleasure-grounds that are constantly mowed, on which they run unincumbered, and where the insects have not sufficient cover to evade their sight. The nest is found in various places, sometimes on the ground, in a heap of stones, the hole of a wall, or on the top of a pollard tree. It is composed of moss, dried grass, and fibres, put together with wool, and lined with feathers or hair. The eggs are four or five, white, and spotted all over with light brown and ash-colour; weighing about forty grains, and much resembling that of the cuckoo, which bird frequently makes choice of the wagtail's nest, in which to deposit her egg. It sings very prettily early in spring, and frequently gives the alarm on the appearance of a hawk, which it pursues in company with the swallows. The young birds have no black on the throat till the returning spring, the old ones lose it in winter. In this state they have been erroneously described as a variety.

**MADERASPATENSIS**; Pied Wagtail. Black, beneath white; oblique band on the wings and lateral tail-feathers white. It inhabits Madras. The female is cinereous in the parts where the male is black.

**CINEREA**; Cinereous Wagtail. Grey-ash, beneath white; breast in the male with a band; tail black, the two outmost feathers mostly white. It is found in many parts of Europe, and frequents watery places.

**INDICA**; Indian Wagtail. Greenish-grey, beneath yellow; breast with two curved confluent bands; middle tail-feathers greenish-grey; the rest blackish-brown, except the outmost and vent, which are white.

**VIRIDIS**; Green Wagtail. Greenish; head, wings, and tail cinereous; edges of the wings, tail, and belly white. It is found in Ceylon, and is about four inches long.

**TCHUTSCHENSIS**; Tchutschchi Wagtail. Olive-brown, beneath white spotted with a ferruginous tint; there is a spot between the bill and eyes, two bands on the wing-coverts, and the greater part of the outmost tail-feathers white. It takes its name from the shores of Tchutschchi, where it is found.

**AFRA**; African Wagtail. Yellowish-brown, beneath yellow; lower tail-coverts white; bill, eye-brows, wings, tail, and legs black. It inhabits the Cape, and is less than the *M. alba* already described.

**FITREOLA**; Yellow-headed Wagtail. Yellow; crescent on the nape blackish; back blueish-ash; two lateral tail-feathers half white.

**FLAVA**; Yellow Wagtail. Breast and belly yellow; two lateral tail-feathers obliquely half white. There is a variety of this species; grey-ash, beneath and eye-brows yellow; quill and tail-feathers black; wings with a white band. It

inhabits Europe and Asia. Visits this country in April, and departs in September. It frequents arable land, especially in the more champaign parts, and sometimes uncultivated ground, interspersed with furze. It is also partial to bean-fields; and breeds in all such situations, being more negligent of water than the white or grey wagtail. The nest is always placed on the ground, composed of dried stalks and fibres, and lined with hair. The eggs are four or five; not very unlike those of the sedge warbler. Its note is more shrill than that of the white, and less so than that of the grey wagtail.

**TIPPIA**; Green Indian Wagtail. Green, beneath yellowish; wings black, with two white bands. It is found in Bengal.

**SINENSIS**; China Wagtail. Green, beneath flesh colour; spot on the ears and stripe from the eyes to the nape pale; the tail is pointed. It is found in China; is six inches long; the bill and legs are black.

**SINGALENSIS**; Cingalese Wagtail. This species is of a changeable green; throat orange; breast and belly yellow; it inhabits Ceylon, is four inches long, and the bill is brown.

**ZEYLONICA**; Ceylon Wagtail. Green, beneath yellow; crown, nape, and wings black; the latter with a bifid white band. It is likewise found in Ceylon; of the same size as the last, with a blue grey-bill.

**OLIVACEA**; Olive Wagtail. Olive, breast and belly white. It inhabits Ceylon; it lifts its tail into an acute angle; the bill whitish, covered at the base with yellowish feathers.

**CARYOPHYLLUS**; Pink-coloured Wagtail. Is, as its name denotes, of a pale pink; bill and legs reddish. It inhabits Ceylon; is very small; wings and tail growing dusky.

**ALBICAPILLA**; White-crowned Wagtail. It is black, beneath whitish; chin, spot on the crown, and eyes white. Found in China, and is full seven inches long.

**GRISEA**; Grisly Wagtail. Grey-ash; crown, bill, throat, and breast black; ocular streak, tip of the quill-feathers, belly and vent white. Quill-feathers edged with grey; legs cinereous.

**MACULATA**; Spotted Wheat-ear. This, as its name indicates, is spotted with black, above brown, beneath whitish; orbits pale ochre; rump brown; tail black with a white base; outmost tail-feathers without, and at the tip white. It inhabits France, and is the size of a lark.

**MASSILIENSIS**; Provence Wheat-ear. Rufous, beneath reddish-white spotted with blackish; crown and neck above brownish-rufous; under the eyes a pale yellow spot; tail-feathers black, the middle ones edged with rufous; four next each side white, outmost all white. It inhabits Provence, as its trivial name imports.

**PILEATA**; Black-headed Wheat-ear. Head, middle tail-feathers, and tips of the lateral ones black; eye-brows, front, chin, rump, tail and belly white. It is found in some parts of Africa and China; is about six inches long, and the bill is black.

**AURANTIA**; Orange-breasted Wheat-ear. Brown; beneath orange; throat whitish; varied beneath with black; greater wing and tail-coverts white; tail-feathers brown, the lateral ones tipped with white. It inhabits the Cape of Good Hope.

**HOTTENTOTTA**; Cape Wheat-ear. Tawny brown; rump with a yellowish band; chin and lower part of the belly whitish, upper tawny; upper tail-coverts yellowish, lower white; tail white at the base, black in the middle, and whitish at the tip. It inhabits the Cape.

**LEUCORRHOEA**; Rufous Wheat-ear. Reddish-brown, beneath



## MOTACILLA.

neath whitish-yellow; rump, base of the tail, and coverts white. It inhabits Senegal, and is seven inches long.

**STAPAZINA**; Ruffet Wheat-ear. Ferruginous; wings brown; area of the eyes and tail black; outmost tail-feathers white at the side. There is a variety of this species that is pale-rufous, beneath whitish; bands across the eyes black; two middle tail-feathers black, the lateral ones white on each side, and fringed with black towards the tip. It inhabits Europe. Bill and legs black.

\* **OENANTHE**; Wheat-ear. Is distinguished by its hoary back; its front, line above the eyes, rump and base of the tail white; through the eyes a black band. The distribution of these colours varies, however, so as to produce four or five varieties. The bird is met with as far north as Greenland, and as far east as India. It visits England annually in the beginning of March, and leaves us in September. It chiefly frequents heaths, warrens, and the edges of hills, feeds on insects, particularly earth-worms; grows prodigiously fat, and breeds in rabbit-burrows, or under a stone. The eggs are from five to eight in number, of a light blue, with a deep blue circle at the large end: the young are hatched in the middle of May. In some parts of England these birds are very plentiful. About Eastbourne, in Sussex, they are taken in snares made of horse-hair, placed beneath a long turf; being very timid, the motion of a cloud, or the appearance of a hawk, will drive them for shelter into these traps. The numbers annually ensnared in the neighbourhood of Eastbourne, are said to amount to 1840 dozen, and they are usually sold at sixpence a dozen: the smaller are eaten in the country, the larger are selected for the London market, and when potted by the poulterers are by many as much esteemed as the ortolan on the continent.

\* **RUBRETRA**; Whin-chat. Blackish; eye-brows white; wings with two spots; chin and breast yellowish. This species is found in various parts of Europe. It lays five eggs, which are whitish, spotted with black.

**FERVIDA**; Sultry Whin-chat. Brown, the feathers edged with rufous; beneath pale ochre; wings with two white spots; tail blackish. It inhabits Senegal; its bill and legs are black.

**MONTANELLA**; Siberian Whin-chat. Pale testaceous, spotted with brown, beneath pale ochre; crown black-brown; eye-lids and chin ochre or white; ears with a black spot; wings brown; tail ashy. It inhabits Siberia.

**MAGNA**; Dark Warbler. Brown; crown and back paler black, beneath reddish; chin whitish; quill and tail-feathers half rufous, the outmost white on the outer webs. It is seven inches and a half in length.

**PHILIPPENSIS**; Philippine Warbler. Violet black, beneath reddish-white; wings with three white spots; head reddish-white; neck dirty red; pectoral band blueish; outmost tail-feathers reddish-white. This, as its name imports, inhabits the Philippine islands.

**COROMANDELICA**; Coromandel Warbler. Black; lesser wing-coverts with a yellow spot, the rest with a white one, and edged with yellow; rump and belly pale rufous; wings and tail black. It is the size of a titmouse.

**PERSPICILLATA**; Spectacle Warbler. Black; wing-coverts with a white spot; tail even; orbits naked, yellowish, wrinkled. It is found near the river Plata, and is the size of a goldfinch. The irides are yellow; pupil blue; tail when extended forming an equilateral triangle.

\* **RUBICOLA**; Stone-chat or Moor Titling. Grey, beneath pale rufous; throat with a white band; lores black. It inhabits hedges and dry moors in Europe and Siberia; is a restless, noisy bird, and builds under a stone, or in some

low shrub; lays five or six blueish-green eggs, with pale rufous spots. The female is varied with blackish and reddish.

\* **ATRICAPILLA**; Black-cap. Brick colour above, cinereous beneath; cap dusky-black; bill brown; crown black, in the female chestnut; body greenish-ash above, grey beneath, gradually growing white; temples grey; quill and tail-feathers brown-ash, edged with greenish-ash, the middle ones very short, legs lead colour. Of this species there are at least three or four varieties. Length full six inches. Inhabits Europe. It is a migrative bird, visiting us early in the spring and retiring in September. It frequents woods and thick hedges, and seems very partial to orchards and gardens, where it delights us with its charming melodious song, which is very little inferior to that of the nightingale, except in variety of notes. It makes a nest in some low bush or shrub, composed of dried stalks, generally of goose-grass, put together with a little wool, and sometimes a little green moss on the outside, and lined with fibrous roots, on which are frequently placed a few long hairs. The eggs are four or five, of a pale reddish-brown, mottled with a deeper colour, and sometimes sprinkled with a few ash-coloured spots. On the first arrival of this bird, it feeds greedily on ivy berries, but forsakes that food as soon as the vernal sun has roused the insect tribe.

There are three varieties of this species, besides the one already described. 1. Varied with black and white. 2. Above blackish; sides grey; chin white. 3. Greenish-brown; cap blackish; neck above cinereous; eye-brows white; wings and tail blackish.

**MELANOCEPHALA**; Black-headed Warbler. Greenish-ash, beneath grey; crown black; eyes with a red band. It inhabits Sardinia.

**MOSCHITA**. This species is of a lead-colour; cap pale rufous. This is likewise found in Sardinia. It frequently hatches the cuckoo's eggs, which are laid in its nest.

**PENNSYLVANICA**; Bloody-side Warbler. Cap yellow; flanks bloody-red. It is found in Pennsylvania; the size of the *M. hippolais*.

**RUSICAPILLA**; Red-cap Warbler. Olive, beneath yellow; throat and breast longitudinal rufous spots; crown rufous; wing-coverts, quill and tail-feathers brown, edged with olive. Inhabits the island of Martinico. The bill is brown; two middle tail-feathers yellowish on the inner webs; legs grey.

**CHRYSOPTERA**; Golden-winged Warbler. Black cinereous, beneath white; cap and spot on the wings pale yellow; chin black. This is an American bird, and found in Pennsylvania in the spring and the autumn.

**CHRYSOCEPHALA**; Orange-headed Warbler. Chestnut, beneath yellowish; head and neck orange; band above and beneath the eyes brown; wing-coverts white and black, tail-feathers black, edged with a yellowish fringe. It is found in Guiana.

**CRISTATA**; Crested Warbler. Above brownish-green, beneath greenish-grey; crest on the head blackish-brown, edged with white. Inhabits Guiana.

**MULTICOLOR**; Rufous and Black Warbler. Black; bill and legs brown; breast, sides of the neck; tips of the greater wing-coverts, and half the tail rufous; belly and vent white. It is found in Cayenne.

**ÆQUINOCTIALIS**; Equinoctial Warbler. Greenish-brown, beneath pale ochre; chin and breast yellowish; wings, tail and legs brown. Inhabits Cayenne.

**PROTONOTARIUS**; Prothonotary Warbler. Yellow; rump cinereous; vent white; wings and tail varied with cinereous



## MOTACILLA.

cinereous and blackish. Found in Louisiana. The legs of this species are black.

**SEMIORQUATA**; Half-collared Warbler. Beneath pale-ash; crown yellowish-olive; behind the eyes a cinereous streak; wing-coverts and quill-feathers brown; tail-feathers cinereous, pointed, the lateral ones white on the inner webs. This is found in Louisiana.

**FULVA**; Orange-bellied Warbler. Olive-brown, beneath yellow; quill and tail-feathers brown, edged with yellow, the primary edged with pale grey. Inhabits also Louisiana.

**FUSCA**; Olive-brown Warbler. Olive-brown; varied with whitish and grey; limbs brown; two outmost tail-feathers within near the tip white. Inhabits Louisiana.

**PINGUIS**; Grasslet Warbler. Grey-olive, a little spotted with black; throat mixed reddish and ash; breast and belly white; spot on the head and rump yellow; quill and tail-feathers edged with grey. Inhabits Louisiana.

**CANA**; Grey-throated Warbler. Cinereous; quill-feathers edged with whitish; tail-feathers black, the outmost nearly white. Found in Louisiana.

**CORONATA**; Gold-crowned Warbler. Spotted with black; cap, flanks, and rump yellow. Found in Pennsylvania only a few days in the spring.

**SENEGALENSIS**; Senegal Warbler. Brown; quill-feathers rufous on the inner webs; tail-feathers black tipped with white. Inhabits Senegal. Middle tail-feathers nearly black.

**LEUCOMELA**. Black, beneath white; crown whitish; feathers of the cheeks and chin black bordered with whitish; rump white; wing-coverts, quill and middle tail-feathers blackish-brown, the lateral ones white with dusky tips. It inhabits rocky precipices near the Wolga; feeds on worms and wags its tail; lays ten eggs under stones, or in the chinks of rocks.

**HIRUNDINACEA**; Swallow Warbler. Black with a gloss of steel-blue; throat, breast and vent crimson; belly white with a longitudinal black band. Found in New Holland.

**ERYTHROGASTER**; Chestnut-bellied Warbler. Black beneath, belly, rump and tail chestnut; cap pale ash; quill-feathers with a white spot; bracelets black. Is found in the summer in the gravelly hollows of the Caucasian torrents, and migrates southerly in the autumn. This is a very restless bird, continually wagging its tail, and is about seven inches long.

**MAURA**; Moor Warbler. Dusky black, beneath white, rump and sides of the neck white; throat bright ferruginous; wings with an oblique yellowish-white blotch; tail-feathers black, the lateral ones from the base half white. A variety of this species is above rufous brown, beneath rufous white. It inhabits Siberia.

**SUPERCILIOSA**; Yellow-browed Warbler. Above greenish, beneath pale; crown with a pale streak; eye-brows yellow. It inhabits Russia.

**FERRUGINEA**; Gilt-throat Warbler. Above cinereous, beneath whitish; neck ferruginous. Found also in Russia.

**CYANURA**; Blue-tailed Warbler. Above yellow-ash, beneath yellowish-white; throat and eye-brows yellowish-white; rump blueish; vent white; tail-feathers blueish-brown, the outer webs pale blue. It inhabits Siberia.

**AUOREA**; Daurian Warbler. Beneath tawny; crown and neck above hoary; front whitish, throat dusky black; back and wings black; the latter with a triangular spot; tail-feathers tawny; the two middle ones black. Is found in many parts of Siberia as far as China.

**STRIATA**; Black-poll Warbler. Streaked with black;

above cinereous, beneath white; crown black; cheeks snow-white. Found at New York.

**INCANA**; Grey-poll Warbler. Head, sides of the neck, and upper tail-coverts grey; quill and tail-feathers black, edged with grey; throat orange; chin and breast yellow; belly whitish-ash. Found at New York.

**FLAVIFRONS**; Yellow-fronted Warbler. Blueish-grey, beneath white; crown, front, greater wing-coverts, and lower of the lesser ones yellow; ocular band black, edged with white; chin and throat black. Inhabits Pennsylvania.

**BLACKBURNIA**. This is a New York bird. Crown black, with a yellow line in the middle; ocular band and lesser wing-coverts black; greater, vent, and lateral tail-feathers white; the middle ones dusky-black; sides of the neck, chin, and middle of the belly yellow.

**MITRATA**; Mitred Warbler. Olive, beneath and front yellow; hind head and collar black. A variety of this species is, body above greenish-grey. Inhabits North America. The bill is black, and the legs brown.

**CUCULLATA**; Hooded Warbler. Greenish, beneath yellow; front and cheeks black; tail wedged. Supposed to be another variety of the Mitrata.

**LITTOREA**; Shore Warbler. Above dusky-green, beneath pale ochre; quill and tail-feathers blackish. Found upon the shores of the Caspian sea, and feeds on worms.

**LONGIROSTRIS**; Long-billed Warbler. Cinereous, beneath dusky-black; bill long. Inhabits the mountains near the Caspian sea.

**OCHROURA**. Head cinereous; neck above and fore part of the back dusky-black; throat and breast shining black; belly yellow. Inhabits among the mountains of Persia.

**OBSCURA**; Obscure Warbler. Upper feathers of the body cinereous at the base, bay in the middle, and blackish at the tips; beneath cinereous; quill and tail-feathers, the outer edges bay. Found among the Persian Alps.

**SUNAMIFICA**; Persian Warbler. Reddish-ash; chin and throat black; breast and belly pale rufous; the feathers tipped with white; vent snowy; middle tail-feathers brown, lateral ones tawny. Inhabits rocky mountains of Persia.

**MURINA**; Murine Warbler. Mouse colour; head, neck, and tail black; ocular streak, belly, and edge of the outmost tail-feathers white. Size of a sparrow. Middle of the belly black.

**SPINICAUDA**; Thorn-tailed Warbler. Chestnut, beneath white; crown spotted with yellow; face and eye-brows yellow; wing-coverts rufous, varied with brown; the greater and quill-feathers brown; tail wedged, the feathers daggered. Found in Terra del Fuego.

**MAGELLANICA**. Yellow-brown, waved with black, and tinged with red; beneath yellow-ash, with blackish lines; tail short, wedged, yellowish-brown, tinged with red, and streaked with black. This also inhabits Terra del Fuego.

**CITRINA**. Yellow, above streaked with black; cheeks, throat, and breast white; tail tipped with yellow. Inhabits New Zealand.

**AURATA**; Gilt-headed Warbler. Yellow; upper part of the head and rump orange; throat deep blue; wings and tail brown. This is an Indian species.

**LONGIPES**; Long-legged Warbler. Pale green, beneath cinereous; beneath the eyes a white arch; front, temples, cheeks and sides of the neck cinereous; vent greenish. Inhabits New Zealand. Bill black; irides blueish-ash, and legs flesh-colour.

**MINIMA**; Least Warbler. Not more than three inches long; pale brown, beneath whitish; bill and very short tail yellowish. Inhabits New Holland.

VARIA;



## MOTACILLA.

**VARIA**; White-poll'd Warbler. Spotted with black and white; wings with two white bars. Found in several of the West Indian islands, particularly St. Domingo and Jamaica; and in the summer, in Pennsylvania, New York, and other parts of the American continent.

**CAPENSIS**; Cape Warbler. Brown, beneath whitish; pectoral band brown; eye-brows white; lateral tail-feathers obliquely white. Inhabits, as its name denotes, the Cape of Good Hope.

**ICTEROCEPHALA**; Quebec Warbler. Black, beneath whitish; cap pale yellow; ocular band black; wings with two yellow bars. Inhabits divers parts of North America.

**DOMINICA**. Notwithstanding its specific name, it takes the trivial name of Jamaica warbler, being common to that and to the island of Dominica. Cinereous, beneath white; before the eyes a pale yellow spot, behind them a white, and beneath them a black one.

**CINCTA**; Belted Warbler. Pale-ash, beneath white; crown and band on the belly pale yellow; breast spotted with brown. Inhabits Canada.

**MADAGASCARIENSIS**; White-eyed Warbler. Greenish, beneath whitish; chin and vent yellow; eye-lids white. Found in the isles of France and Madagascar.

**BORBONICA**. This is common to the islands of Bourbon and Madagascar. Grey-brown, beneath dull yellowish-grey; quill and tail-feathers brown, edged with a much lighter brown.

**MAURITIANA**; Maurice Warbler. Blue-grey, beneath white; quill and tail-feathers black, edged with white. Inhabits the isle of France. Bill blackish; legs blueish.

**LIVIDA**; Madagascar Warbler. Blue-grey; vent white; bill and legs lead-colour; quill-feathers blackish, edged with white; tail-feathers black, the two outmost white. Found in Madagascar, as its trivial name imports.

**FLAVESCENS**; Citron-bellied Warbler. Brown, beneath yellowish; temples whitish; equal tail and quill-feathers edged with rufous brown. Found in Senegal. Bill and legs dusky.

**RUFIGASTRA**; Rufous-bellied Warbler. Olive brown, beneath yellowish-rufous; quill and tail-feathers brown. This, like the last, is an inhabitant of Senegal, and has been thought to be a variety of the *Flavescens*.

**UNDATA**. Black, the feathers edged with rufous; beneath white; rump rufous; tail wedged; quill and tail-feathers brown, edged with rufous white. It inhabits Senegal.

**FUSCATA**; Dusky Warbler. Brown, beneath grey; tail long, equal. Inhabits Senegal; is six inches long; the bill is black, and legs yellow.

**SUBFLAVA**; Flaxen Warbler. Rufous-brown, beneath grey; rump pale; sides of the body pale rufous; tail wedged. Inhabits Senegal.

**AUROCAPHILA**; Golden-crowned Warbler. Olive, beneath white; crown golden; eye-brows black; breast spotted with black. This is reckoned a North American species, but in winter it migrates southerly; eggs white, spotted with brown.

**PETECHIA**; Red-headed Warbler. Olive, beneath yellow, dotted with red; cap red. Found in Pennsylvania.

**ALBICOLLIS**; St. Domingo Warbler. Olive, beneath yellowish; throat and breast dull pale ochre, streaked with red; quill and tail-feathers brown, edged with greenish-yellow, lateral ones within yellowish. In this species, found in St. Domingo, the bill is of a horn colour; temples yellowish; legs grey-brown. In the female, the neck above is of a greenish-ash.

**LUDOVICIANA**; Louisiana Warbler. Olive; throat and breast yellow, spotted with red; belly pale ochre; two bands on the wings, and two outmost tail-feathers within, near the tip white. This inhabits Louisiana and St. Domingo.

**CHLOROLEUCA**; Green and White Warbler. Olive, beneath pale ochre; head cinereous, varied with olive; greater wing-coverts and tail-feathers brown, edged with yellowish-green. Inhabits St. Domingo. Bill horn-colour; tail slightly forked, the lateral feathers varied with yellow; legs grey-brown.

**AURICOLLIS**; Orange-throated Warbler. Olive, beneath orange; belly yellowish; vent whitish; greater wing-coverts and middle tail-feathers cinereous, the lateral ones within white, without at the tip black. It inhabits Canada.

**MACULOSA**; Yellow-rumped Warbler. Olive, spotted with black; head and quill-feathers cinereous; belly, vent, and two bands on the wings white; rump yellow; breast yellow, spotted with black. Inhabits Pennsylvania.

**FUSCESCENS**; Brown-throated Warbler. Brownish, beneath varied with blackish and rufous-grey; bill, chin, and ocular band brown. Found in Jamaica.

**TIGRINA**; Spotted Yellow Warbler. Brown, the feathers edged with olive; beneath and rump yellow; lower part of the belly yellowish-white; behind the eyes a rufous blotch; quill and tail-feathers edged with olive. There is a variety of this species, which is characterized as of paler colour, beneath whitish; breast spotted with brown; wing-coverts without white. The first of these inhabits Canada, and the second St. Domingo.

**PINUS**; Pine Warbler. Olive, beneath yellow; lores black; wings blue, with two white bands. This species inhabits Carolina in the summer months. The female is wholly brown.

**VIRENS**; Green Warbler. Green-olive, beneath white; cheeks, sides of the neck, and breast yellow; neck beneath white; wings with two white bands. It is found in Pennsylvania.

**DUMETORUM**; White-breasted Warbler. Ashy-brown; head blueish; chin and breast white. Inhabits Germany and Russia.

**NIGRIROSTRIS**; Black-jawed Warbler. Olive-brown; lores and chin rufous-yellow; breast rufous, spotted with blackish; belly white; wing-coverts tipped with reddish-white; quill-feathers edged with yellowish; tail-feathers pointed, the outmost white.

**LUTESCENS**; Buff-faced Warbler. Rusty-brown, beneath reddish-white; front and chin buff; ears with a red spot; breast spotted with black. This is about six inches in length; the bill is of a dusky black, and the legs brownish.

**BOREALIS**; Rusty-headed Warbler. Green, beneath yellow; chin and temples ferruginous; tail rounded; the lateral feathers tipped with white. Found in Kamtschatka, as is also the next, from whence it takes its specific and trivial names.

**KAMTSCHIATKENSIS**. Brown, beneath paler; middle of the belly white; front, cheeks, and chin pale ferruginous. The bill is long and slender.

**AWATCHA**. This also inhabits Kamtschatka. Brown; chin and breast white, spotted with black; middle of the belly and lores white; primary quill-feathers edged with white; tail-feathers orange at the base.

**CANESCENS**; Van Diemen's Warbler. Hoary brown, beneath white; head black; front streaked with white; breast and vent streaked with black; spot on the wings and edge



edge of the tail-feathers at the base tawny. Inhabits New Holland.

**ÆQUINOCTIALIS**; Equinoctial Warbler. Brown testaceous, beneath white; rump pale; tail-feathers with obsolete bands. Inhabits Nativty island.

**NIGRICOLLIS**; Black-necked Warbler. Sub-crested; above pale grey, beneath flesh-colour; cap, neck above, quill and tail-feathers black. Inhabits India. Its bill and legs are yellow.

**PLUMBÆA**. Lead colour; beneath cinereous; quill and tail-feathers dusky. This is a very small bird.

**CAMBAIENSIS**; Cambay Warbler. Blackish-brown, beneath fine black; top of the belly and vent rufous; wing-coverts white. Found in India.

**GUZURATA**; Guzurat Warbler. Greenish, beneath white; crown chestnut: quill-feathers and tail brown. Found in India. Bill and legs brown; quill and tail-feathers edged with green.

**ASIATICA**; Asiatic Warbler. Brown, beneath yellowish; head and neck black; lores and chin white; tail long. A variety of this species is brown; front, eyebrows, and body beneath white; lateral tail-feathers half white. This is of the size of the nightingale, and inhabits Guzerat. The bill is blackish, with a few small bristles at the base.

**CAPRATA**; Luzonian Warbler. Black; rump, vent, and spot on the wing-coverts white. It takes its trivial name from Luzonia, where it is found. The bill is blackish; legs brown. Female without the spot on the wings. A variety is thus described: head, neck, and body above black; beneath whitish-rufous; wings with a white band. Inhabits China. Bill and legs red.

\* **PHENICURUS**; Red-start. Of this there are three varieties: 1. Throat black; belly and tail rufous; head and back hoary; white front. 2. Breast spotted with rufous. 3. Body cinereous.

This species makes its appearance in spring, along with the other summer birds. It commonly alights upon old towers and uninhabited houses; choosing always the highest and most inaccessible pinnacles. It is found, too, in the most impenetrable recesses of dark woods, where it indulges, undisturbed, its solitary habits, and utters its plaintive notes.

The red-start nestles in the holes of those old walls which it frequents, or in the hollow of a rotten tree, and sometimes in the cliff of a rock. The young ones are excluded in the month of May: they are five or six in number. While the female is employed in hatching and rearing them, the male is commonly stationed, as a sentinel, upon a point of the rock, or upon the top of the wall, whence he utters his uninterrupted song; a pledge to the mother, that no danger is approaching her family. It is only when taken young, that the red-start will acquire any familiarity with man; for, though this bird be frequently a near neighbour of the human race, he still preserves his native wildness and timidity. He acquires neither the confidence and intimacy that distinguish the red-breast, the gaiety of the lark, nor the vivacity of the nightingale. His disposition is melancholy, and his manners wild. If taken when old, he refuses all food, preferring death to captivity; or if he survive his freedom, his obstinate silence and sullen grief plainly indicate how deeply he is penetrated with the misery of his condition.

**TITHYS**. Quill-feathers blackish; tail-feathers rufous, the two middle ones black, with a pale rufous web. It inhabits Italy.

**GIBALTARIENSIS**; Grey Red-start. Hoary; front,

temple, and chin black; hind-head and lower part of the belly white; rump and tail orange; two middle tail-feathers brown. Inhabits Gibraltar.

**ERYTHACA**; Red-tail Warbler. Back and quill-feathers cinereous; belly and tail-feathers rufous. Inhabits Europe; is something less than the red-start; feeds on worms, and wags its tail: its eggs are white, varied with grey. The male has a sort of horse-shoe mark on the throat, and spot between the bill and eyes brown.

**GUIANENSIS**; Guiana Red-tail. Grey, beneath white; wings and long tail rufous. Inhabits Guiana. The bill of this species is pale, and the legs flesh-colour.

**ATRATA**; Black Red-tail. Black; crown plumbeous; quill-feathers black, the secondaries white on the outer edge; tail-feathers rufous, the two middle ones dusky-black. The feathers of the back edged with dark brown.

**GUIRA**; Guira Warbler. Green, beneath pale yellow; cheeks and chin black, surrounded with a pale yellow line. It inhabits Brasil, and is the size of a goldfinch.

**SUECICA**; Blue-throated Warbler. Breast ferruginous, with a blue band; tail-feathers brown, towards the tip ferruginous. A variety of this has a silvery spot on its breast. It inhabits Europe and Siberia; sings very sweetly, and does not migrate. The female has a white chin, with a broad blue band, and another black one terminated by black.

**SIALIS**; Blue Warbler. Above blue, beneath red, belly white. Inhabits North America; migrates. The female has its secondary quill-feathers tipped with white.

**FULICATA**; Sooty Warbler. Violet-black; vent chestnut; wing-coverts with a white spot. Inhabits the Philippine isles. Bill and legs brown.

**CAYANA**; Cayenne Warbler. Blue; frontlet, shoulders, wings, and tail black. There are two varieties: 1. Head blue; chin black. 2. Head entirely blue. They all are found in Guiana.

**CYANOCEPHALA**; Blue-headed Warbler. Green; head and upper wing-coverts blue; chin hoary; quill-feathers brown, edged with green. Found in Cayenne. Its bill is brown and legs grey.

**LINEATA**; Blue-striped Warbler. Beneath and spot on the crown blue; front, stripe over the eyes, and sides of the neck of a shining blue, band on the breast and belly white. This is a Cayenne species.

**CYANEA**; Superb Warbler. Black-blue, beneath white; feathers of the head long, lax, turgid; front, cheeks, and lunule on the neck of a fine blue. A variety is described as blackish-grey; head, chin, and neck above blue; wing-coverts brown; quill and tail-feathers black. The first is found in New Holland; the second in Manila. The female is somewhat different, being brown above, white beneath, and blue round the eyes.

**VELIA**; Red-bellied Warbler. Of this species there are four varieties. 1. Blue; belly and rump tawny. 2. Front and rump golden; body beneath blueish. 3. Lower part of the back and belly rufous. 4. Back blackish-brown; breast and belly scarlet. Inhabits Guiana, Surinam, and Cayenne.

**CANADENSIS**; Black-throated Warbler. Above blue, beneath white; throat, quill and tail-feathers black. Is found, in the summer months, in Pennsylvania.

**CERULEA**; Cærulean Warbler. Above blue, beneath white; wings and tail black. A variety of this species has its head black; quill and six middle tail-feathers black, the rest white. It inhabits Pennsylvania: builds a cylindrical nest, open at the top, and posited in the forked branch of a tree.



## MOTACILLA.

**CYANA.** This species is of a fine blue, beneath it is snowy; from the bill to the wings there is a streak of black.

**\* ARUNDINACEA;** Reed Wren. Above olive-brown, beneath whitish; lores and orbits whitish-brown; band in the middle of the wings beneath tawny-yellow; tail brown, slightly wedged. This species is found in the reedy places in England; is seven and a half inches long; builds its nest near the ground, with three or four reeds for its supporters; and lays four whitish eggs, spotted with olive.

**SIBILLA;** Sybil Warbler. Blackish, beneath white; breast rufous; wings with a white spot. Inhabits Madagascar, and sings very finely.

**SPERATA.** Greenish-brown; beneath and rump rufous-grey; two middle tail-feathers blackish, lateral ones obliquely half tawny-brown. A variety has the chin white, and breast rufous. Inhabits the Cape of Good Hope.

**RUBECOLA;** Robin-red-breast. Grey; throat and breast ferruginous. The little birds of this name, on account of their near approaches to our dwellings, and their familiarity with man, are, perhaps, the best known of all the feathered race, except such as are kept in domestication. They are capable of enduring the most severe winters in this island; but, at the approach of such inclement seasons, they leave the woods, where they reside in summer, and are willing to acknowledge a kind of dependence upon man.

It is remarkable, that a bird which remains in North Britain all the year round should migrate from France during the winter months. Such, however, is the case: in France the red-breast frequents the hedges and dwelling-houses, for a short time, in autumn and spring; but regularly, in the dead of winter, when the hard frost commences, disappears. In his spring visit he makes but a short stay, hastening, as he then is, to enter the forest, that he may there, amidst the spreading leaves, enjoy solitude and love.

The red-breast builds its nest at the foot of some thick shrub, or upon a tuft of grass, able to support it. The materials of which it is composed are oak-leaves, moss, and a bed of feathers within. Sometimes, after the edifice is finished, the bird covers it entirely over with leaves, allowing only a small passage to remain sufficient to admit its body.

During the season of nestling and incubation, the male makes the grove resound with his soft and melodious lays. His warbling is soothing and tender, animated occasionally with notes of a louder tone, and sometimes, too, graced with those touching and engaging accents, that seem to express the ardour of his love. In the sweet society of his female, he seems to be wholly absorbed: at the interference of other company, he becomes fretful and enraged; for no stranger is permitted to intermeddle with his joy: even those of his own species he pursues with rage, till he banishes them from the district he has chosen for himself. His love exhibits a strange mixture of jealousy and attachment.

There is no bird more active, none satisfied with a smaller portion of rest, than this bird: he is the first that appears in the woods at the break of day, and the last that retires thither in the evening to enjoy repose. There are two varieties. 1. Chin white; wing-coverts varied with white, black, and rufous; quill and tail feathers black, edged with rufous. 2. Entirely white. The Rubecola species is spread over the whole of Europe, from Norway and Sweden to the Mediterranean.

**TROGLODYTES;** Wren. Grey; eye-brows white; wings waved with black and cinereous. Inhabits Europe and Asia. The ancients gave this bird the name of troglodyte, from a fancied resemblance between its manners and those of a race of men who were said to inhabit dens and caves of

the earth. There is some difference among naturalists in classing and distinguishing the tribe of wrens; a circumstance that might be expected in subjects so minute, and so slightly discriminated by nature. The common wren is known from its residence. It frequents farm-houses and country villages, where it is seen hopping about, full of life and vivacity, even in the midst of winter, expressing, towards evening, its happiness in cheerful and well-toned notes. It appears upon the top of heaps of fire-wood, or by the sides of old walls, whence it disappears in a moment, by making its way into some small hole. It remains not, however, long concealed; but returns to make quick and incessant movements with its little tail, always raised in an almost perpendicular direction.

The flights of the wren are very short and expeditious. When flying, it moves its wings with such rapidity, that they become invisible. Its length is about three inches and a half, and its breadth, when the wings are extended, five. The whole plumage is transversely barred with undulating lines of brown and black; on the belly and lower parts it inclines to grey.

This bird, slender as it is in form, is almost the only one that remains with us during the most severe winter; and it is the only one of the whole feathered creation which continues its warbling in a season in which the universal silence of the woods and groves is interrupted only by the croaking of ravens. During a fall of snow it is still better heard; for then it enters the court-yards, the door of the stable, or dairy, seeking, among the garbage, for the dead bodies of insects, or their larvæ.

**PLATENSIS.** Above varied with rufous and black, beneath white; quill and tail-feathers barred. Inhabits Buenos Ayres.

**LUDOVISIANA.** Rufous-brown; eye-brows, cheeks, and body beneath yellowish; quill and tail-feathers barred with black and rufous. In this species there is over the eyes a band reaching to the sides of the neck; the cheeks are waved with brown.

**FULVA;** Brown Wren. Brown, beneath paler; back, wings and tail with blackish bars. Inhabits Surinam. It sings well; the bill and legs are of a yellowish-brown.

**CALENDULA;** Ruby-crowned Wren. Greenish-ash; crown with a ruby line; belly and wings beneath yellowish. It inhabits North America. The female is without the ruby vertical line, and varies in having a scarlet lunule on the nape.

**REGULUS;** Golden-crested Wren. Greenish; secondary quill-feathers yellow on the outer edge, and white in the middle; crown orange; bill black; crest orange, (of the female yellow,) each side edged with black; body yellowish-green above, reddish-white beneath; wing-coverts dark-brown, with two transverse white bars; legs yellow. Inhabits every quarter of the globe. This is the smallest British bird, its weight seldom exceeding eighty grains, and its length three inches and three quarters. It migrates from the Shetland islands in winter, but continues in the Orkneys the whole year. Its song is like that of the common wren, but its voice is weaker. It builds a nest nearly of a round form, with a hole in the side, and lays from six to eight eggs. It erects or depresses the crest at pleasure. Though not uncommon, it often escapes observation from the smallness of its size. It has also been remarked, that the female, from some cause which has not yet been discovered, is frequently destroyed during the time of incubation; and the nest, with the eggs, left to decay.

**ELATA.** Crested, greenish, beneath whitish-ash; hind-head



head and vent pale yellow; wing-coverts at the edge, and lateral tail feathers at the tip, white. Inhabits Cayenne.

**TROCHILUS**; Yellow Wren. Dusky green above, yellowish-white beneath; wings and tail brown, and edged with green; eye-brows yellow. Four inches and a half long. Inhabits Europe and America. Frequents wooded and inclosed situations, especially where willows abound. Visits us early in April, and soon begins its usual song, which is short, with little variety. Makes an oval nest, with a small opening near the top, composed of moss and dried grass, and lined with feathers, either in the hollow of a ditch, or in a low bush, close to the ground. The eggs are six or seven, white, and spotted with light rust colour. Has often been confounded with the lesser petty-chaps, and the wood-wren.

\* **SYLVICOLA**; Wood-wren. Greenish, beneath yellowish; eye-brows yellow; belly and vent snowy. Is found in many parts of Europe, and in this country, particularly in the oak-woods of Carmarthen. It builds on the ground a roundish nest, with the entrance near the top; eggs white, sprinkled with ferruginous spots.

**ÆSTIVA**; Yellow-poled Warbler. Olive-green, beneath yellow, and breast with reddish spots; lateral tail-feathers within yellow. A variety has its body above brown. It inhabits Guiana, but in the summer migrates to Canada. Bill and legs black; irides blue.

**CAROLINENSIS**; Carolina Yellow-poll. Olive-green, beneath yellowish; quill and tail-feathers brown, the lateral ones edged with yellow. Found in Hudson's Bay.

**SUTORIA**; Taylor-warbler, or Taylor-bird. Entirely yellow, and very small, scarcely exceeding three inches in length. Inhabits India. Its nest is composed of two leaves, the one generally dead, which it fixes at the end of some branch, to the side of a living one, by sewing both together, with little filaments, (its bill serving as a needle,) in the manner of a pouch or purse, and open at the top. Sometimes, instead of a dead and a living leaf, two living ones are sewed together, and, when thus connected, seem rather the work of human art than of an un instructed animal. After the operation of sewing is finished, the cavity is lined with feathers, and soft vegetable down. The nest and birds are together so very light, that the leaves of the exterior and more slender twigs of the trees are chosen for the purpose; and, thus situated, the brood is completely secured from the depredations of every invader.

**CAFFRA**; Caffrarian Warbler. Olive; chin and tail ferruginous; eye-brows white. Is found at the Cape of Good Hope.

**GULARIS**. Above ferruginous, beneath white; crown and rump cinereous; area of the wings and lateral tail-feathers yellow, tipped with brown, the middle ones entirely brown.

**FLAVICAUDA**; Yellow-tailed Warbler. Olive, beneath white; crown and rump cinereous; area of the wings and lateral tail-feathers yellow, tipped with brown, the middle ones entirely brown. Inhabits America, and migrates.

**TSCHECANTSCHIA**. Above blackish, beneath ferruginous; head dark brown; nape whitish; collar and oblong spot on the wings white; back black. Inhabits Siberia.

**MELANOPA**. Bluish-ash, beneath yellow; lores and throat black; eye-brows and three lateral tail-feathers each side white; the outmost black on the exterior edge. There is in this species a white line from the gape through the neck; and the tail is even.

**HUDSONICA**. Rusty-brown, beneath whitish; neck beneath with dusky stripes; outmost tail-feather white, second white edged with black, third white on the disk. It is about six inches long, and inhabits Hudson's Bay.

\* **BOARULA**; Grey Wagtail. Cinereous, yellow beneath; first tail-feathers entirely, second, on the inner side, white; bill and legs brown; chin and throat black; wing-coverts brown, and edged with ash; quill-feathers brown, the secondaries white at the base; middle tail-feathers black, and edged with greenish. This elegant species inhabits Europe, visits us about the latter end of September, and departs in April. It is much in motion, constantly flirts the tail, seldom perches, frequents waters, makes its nest on the ground, and sometimes on the banks of rivulets, and lays from six to eight eggs, of a dirty white, marked with yellow spots.

There is a variety; olive-brown, beneath yellow; lower part of the neck grey, first tail-feathers entirely, second and third on the inner side and tip white. This species is found in Java, and is seven inches long.

**MOTALA**, in *Geography*, a river of Sweden, in East Gothland, which runs from the Wetter lake to the Baltic; 22 miles E. of Nordkiöping.

**MOTALAZITES**. See **MOATALAZITES**.

**MOTAMOCULO**, in *Geography*, a town on the W. coast of Madagascar; 18 miles S.E. from Cape St. André.

**MOTCHANG**, a town of Corea; 18 miles S.W. of Yang-tehen.

**MOTCHIAMA**, an island of Africa, in the kingdom of Angola, formed by the river Coanza; about four or five miles long, and one broad, producing variety of roots and herbs, and breeding plenty of cattle. On this island were formerly settled five or six Portuguese families, who carried on a considerable trade in slaves.

**MO-TCHOU**, a town of Corea; 30 miles W. of Leng-Kouang.

**MOTE**, a town of the county of Tyrol; 9 miles S. of Tyrol.

**MOTE**, *Mota*, frequently occurs, in our ancient customs, for a meeting, court, or plea.

Of motes, by the Saxons also called *gemotes*, considered in the sense of assemblies, or courts, there were divers kinds; as *twittenagemote*, *folkegemote*, *schirgemote*, *hundred gemote*, *burgegemote*, *wardgemote*, *baligemote*, *swainagemote*, &c. See each under its proper article.

**MOTE**, *Mota*, was also used for a fortress or castle; as *mota de Windfor*, &c.

**MOTE** also denoted a standing water to keep fish in; and sometimes a large ditch encompassing a castle, or dwelling-house.

**MOTECAZE**, in *Geography*, a town of Hindoostan, in Guzerat; 48 miles S. of Junagur.

**MOTECTIO**, *STYLO*. See **STYLE**.

**MOTECTUS** is defined by Tinctior in his "*Diffinitiorum Terminorum Musicae*,"—"Cantus medicis cui verba cujusvis materiae sed frequentius divinae supponuntur."

**MOTELLI**, in old *Musical Writers*, seems of the same import as *Motetto*; perhaps it was the diminutive of *motetto*.

**MOTERANA**, in *Geography*, a town of Naples, in the province of Otranto; six miles S.W. of Lecca.

**MOTET**, Fr., *Motetto*, Ital. formerly signified a studied composition, enriched with all the beauties of the art; such were the motets of Bassani, regarded at the end of the 17th and beginning of the 18th century, at which time they were in the highest favour in all concerts where there was good singing. See **BASSANI**.

At present the name of *motet* is given to every composition set to Latin words; such as hymns, psalms, or any small portion of scripture in the Romish church. As *mot*, in French, implies a phrase, or short sentence, so *motet* implies



a verse or short period taken from the sacred writings, as the text of what we should call an anthem, and the Germans a sacred cantata. Though a cantata, in Italy and elsewhere, generally implies a vocal composition for a single voice, yet there are motets and cantatas in the service of the Romish church, from one to eight parts. As the verse or sentence is usually short, the too frequent repetition of the words is objected to in the construction of motets. (See CANTATA.) In the Lutheran church, what the Roman Catholics call *motets*, and the church of England *anthems*, are called *cantaten*.

MOTH, in *Zoology*, an insect of the winged kind, which is very destructive to different sorts of crops of the garden kind, and other descriptions. See PAPILIO and PHALÆNA.

MOTH, *Falſe*, an insect which proceeds from a small caterpillar, the body of which is smooth and whitish. It has sixteen legs, does not lodge in the grains of corn, but contrives to fasten several of them together with a web which it spins, and with which it makes itself a dwelling-place. The sheath in which the caterpillar of the false moth usually abides, is generally in the middle of the little heap of grains which it has collected for its food, and which distinguishes it from the caterpillar of the true moth: it can quit this sheath at any time, to eat the grains around it, one after another. It generally attacks several grains at once, and always without order, eating sometimes of one and sometimes of another; so that several are gnawed, when not one is wholly consumed. When these insects are very numerous in a granary, all the grains upon the surface of the corn are linked together by a web, so as to form a crust, which is sometimes three inches thick. This caterpillar turns into chrysalis, or aurelia, in a grain which it has hollowed, or in the sheath of its web, and issues thence in the month of June, in the form of a butterfly. When a heap of corn is stirred, in which there are many caterpillars of the species of this false moth, those insects crawl up the walls; but they soon return to the heap, and by the next day, cover it all over with a new web. In the state of moth it is grey, has six legs, and they are frequently seen in vast numbers, fluttering about the eaves of the windows of granaries, in the spring and summer, when the weather is very hot. The females lay their eggs upon the heaps of wheat, and these eggs produce the caterpillars, or corn-worms, as some call them, which feed on the grain, and envelope it with their silky web, so as to form over the whole surface a crust that is sometimes three or four inches thick. This entirely spoils the corn within that depth, besides communicating a bad smell to the rest. These worms, or rather caterpillars, for they have sixteen legs, are smooth, whitish, and seldom exceed a quarter, or, at most, a third part of an inch, when at their full growth. Breaking of their webs avails but little, for they are woven again by the next day: for which reason some have been of opinion that it is best to let them enjoy undisturbed the surface of the corn of which they have taken possession. But it should be considered, that three inches are a sixth part, and four inches upwards of a fifth, of any quantity of corn spread eighteen inches deep, which is the medium thickness at which it is laid; and that, independent of the bad smell with which the rest is tainted, this is a very considerable object, though it extend no farther. When this crust is broken, most of the grains which compose it are found either to be gnawed in their inside, or full of live worms, or of aurelia, according to the season; or the empty sheaths of the caterpillars, if the aureliæ have been transformed into moths, are only seen.

Some have asserted that "srewing the corn with pow-

dered lime, so as to form a sort of crust over it, will preserve it from the ravages of these insects: but from an idea that the surface would be spoiled, M. Duhamel did not try this expedient. From various observations and reflections, he was led to suspect that this insect, as it delights in none but very warm places, would not be able to live in the cold air of his ventilating granaries." After collecting the various wormy coats and webs formed by these insects, with their ova, he put them into one of his granaries, which contained seventy-five cubic feet, and was ventilated from time to time during all the winter. Towards the end of May, when the vent-holes at the top of the granary were opened, a prodigious number of moths flew out, which shewed that they did not like their situation. On being shut, and remaining in this state some time, afterwards, when emptied, all the moths and worms were dead, and there remained only a thin crust, not above the twelfth part of an inch thick on the top of the corn, which had so far lost the bad smell it had when put into the granary, that it sold for the current market-price. But not satisfied with this method, he tried the effect of the stove upon another parcel of wheat known to be full of these worms. A heat from 45 to 50 degrees of Reaumur's thermometer (from 115° to 124° of Fahrenheit's) killed them all. This corn was then laid up in a common granary, where it remained two years without being attacked by any of these moths, and even in the third but very few of them appeared. It is therefore concluded that by either of these methods, this insect may be destroyed without injuring the grain in any great degree.

MOTH, *Field*, *Tinea campestris*, in *Natural History*, the name given by M. de Reaumur to a species of insect, which in all respects resembles the moth so destructive of clothes except in its food; as that feeds upon woollen, and makes its nest or covering of that substance; this eats the leaves of trees, and in the same manner makes itself a covering from the fibres and integuments of them.

Their changes are the same with those of the common moth, and performed in the same manner; they only seem to differ in having a more moist food.

M. Reaumur first observed these on the leaves of the ash.

This creature for a great part of its life wants no covering, but, like the ascarides, making its way through the upper integument of the leaf, it feeds on the parenchyma and juices; at length, when it has eat away all the substance of the leaf, it bites out a piece from each integument of it, over and under its body, and fastens the edges all round with threads of its own spinning; thus making a complete case or covering, enabling it to bear the open air. This done, it marches from its place to find another leaf fit to supply it with more nourishment: thus it changes place several times during its life, and as often changes its covering, which requires but a very little time to make anew.

These are small animals of this genus; but there are others which are considerably larger, and which make their coverings of various matters and of different structure; they are usually very rough and rugged, and seem made of any matter that happens to be in the way; some species usually make them of pieces of straw and particles of chaff, others of small twigs of bushes, others of the dry leaves of the oak, broom, and other plants.

All these animals might have been described as the dependents on the beetle and fly kinds; but as they have this remarkable quality of feeding in the same manner, and making themselves cases of different materials in the manner of the tinea, or clothes moth, while in the worm-state, and in this state they are much more obvious to the eye than the flies, beetles,



beetles, &c. produced of them, many of which are so small as to escape observation; this accurate author has chosen to describe them together, and in this their imperfect state. He adds an account of another set of animals somewhat allied to them, which he therefore calls the *pseudo-tinea*, or false moth. See *Pseudo-tinea*, and the preceding article.

*MOTH Mullin.* See MULLEIN.

*MOTH-Otter*, that sort of moth which is so injurious to the hop plant. See HOP and OTTER-Moth.

*MOTHE-LE-VAYER*, FRANCIS DE LA, in *Biography*, a learned French writer, born at Paris in 1588, was brought up to the profession of the law, and long occupied the post of substitute to the procureur-general in the parliament of Paris, which he inherited from his father. He was, probably, never pleased with his profession, and at length his attachment to letters induced him to quit the occupation, and he became one of the most considerable scholars of his time. In 1639 he was, on account of his works, admitted a member of the French academy, and appointed to the office of preceptor to the duke of Anjou, afterwards duke of Orleans; historiographer of France, and titular counsellor of state. He was supposed to have a strong disposition to scepticism, and bore with calmness the imputations to which his opinions exposed him: once, when walking in the gallery of the Louvre, he overheard a person whisper to his friend, "there goes a man without religion;" to which he replied, "I have religion enough, friend, to pardon your insult." He died in 1672, at the age of eighty-five. He is mentioned by Guy Patin as a Stoic, who would neither praise nor be praised, and who followed his own fancies and caprices without any regard to the opinions of the world. His dress and usual demeanour so distinguished him from other men, that he was taken, by strangers, to be an astrologer. In the court he lived like a philosopher, immersed in books, simple and regular in his manner of living, and void of ambition and avarice. He was a great writer: one of his works was a "Treatise on the Virtue of Pagans," which was answered by Arnauld. Le Mothe's bookseller complaining that his book did not sell, "I know a feeret," said the author, "to quicken the sale:" he procured an order from government for its suppression, which was the means of selling the whole edition. His works were collected in two volumes folio, and were afterwards printed in fifteen volumes 12mo. This collection does not include his "Dialogue after the Manner of the Ancients," in which he displayed his scepticism at large: nor his "Hexameron Rustique." Moreri.

*MOTHER, MATER*, a female, who hath borne, and stands in the relation of parent to another.

Thus Eve is called our common mother; Cybele, among the ancients, was the mother of the gods.

*MOTHER, Queen*, signifies the same with what we otherwise call *queen dowager*.

We meet with empresses on medals and inscriptions, with the title of mother of the camp, mother of the senate, mother of the country; *mater senatus*, *mater castrorum*, *mater patriæ*, &c.

*MOTHER of God*, is an attribute commonly given to the blessed Virgin. It had its origin from the Greeks, who first called her Θεοτοκος; in imitation of whom some Latins began to call her *Deipara*, *Dei genitrix*. The council of Ephesus first gave a sanction to the appellation; but the fifth of Constantinople decreed, that the Virgin should always be thus called. This gave rise to terrible disputes: Anastasius, a presbyter of Nestorius, patriarch of Constantinople, first asserted, in a sermon, that the Virgin was by no means to

be called Θεοτοκος; upon which words, a great tumult arising, Nestorius took his presbyter's part, and taught the same doctrine.

*MOTHER-Tongue* is properly an original language, from which others are formed.

Of mother-tongues, Scaliger reckons ten in Europe; viz. the Greek, Latin, Teutonic or German, Slavonic, Epirotic, Scythian or European Tartar, Hungarian, Cantabrian, Irish, and British.

*MOTHER-Churches*, are those which have founded or erected others. See PARISH.

In beneficiary matters they say, it is not lawful for a man to enjoy, at the same time, both the mother and the daughter: meaning, that the canon-law does not allow an abbey, and the benefices depending thereon, to be held by the same person.

*MOTHER, Fits of the.* See HYSTERIA.

*MOTHER-Water*, in *Chemistry*, a name given to the solution of crystalline salt, after no more crystals will form in it without more of the water being evaporated. It will be easy to conceive, that when the crystallization of a salt has gone on till the attraction of the water for the salt is equal to the attraction by which the crystals are formed, that the process must stop. The affinity of crystallization may be increased, and more crystals may be formed, either by evaporating an additional quantity of water, or by exposing the mother-water to a lower temperature.

*MOTHER of Nitre.* See NITRE.

*MOTHER-Thyme*, in *Botany*. See THYME.

*MOTHER-Wort. Cardiaca.* See LEONURUS.

Mother-wort has been used as an ingredient in some of the compound waters, intended against hysterical complaints; and the country people frequently make an infusion of it in the manner of tea, for the same purpose. It is also said to be good in flatulencies and colics, to give great relief in epileptic cases, and to destroy worms. It promotes urine and the menses; but its power this way is greatly inferior to that of penny-royal.

The name *cardiaca*, improperly given to this plant, has led many into an opinion of its being a cordial; but experience does not shew any such thing.

*MOTHER of Vitriol.* See VITRIOL.

*MOTHER Carey's chickens*, a name given by the English sailors to birds which they suppose to be the forerunners of a storm. See *PROCELLARIA gigantea*.

*MOTHER Bank*, in *Geography*, a bank in the Channel, between the Isle of Wight and the coast of Hampshire, with from three to eight fathom water. N. lat. 50° 41'. W. long. 1°.

*MOTHER Kill*, a river of the state of Delaware, in Kent county, which runs into Delaware bay. N. lat. 39° 5'. W. long. 75° 30'.

*MOTHER and Daughters*, three remarkable hills on the coast of New Britain, in the Pacific ocean, situated W. of cape Palliser.

*MOTI*, a town of Persia, in the province of Segestan; 60 miles N. of Zareng.—Also, a town of the island of Sardinia; 27 miles E.S.E. of Sassari. N. lat. 40° 42'. E. long. 9° 20'.

*MOTIERS*, a town of the Helvetian republic in the principality of Neuchâtel, the seat of a court of justice; 13 miles S.W. of Neuchâtel.

*MOTIKLEI*, a gulf of Russia, in the sea of Ochotskoi, between cape Duginskoi and the continent, about 40 miles long, and from 12 to 16 broad. N. lat. 59° 20' to 59° 36'. E. long. 147° 34' to 149° 14'.

MOTIN,



MOTIN, a town of Mexico, in the province of Mechoacan, situated at the foot of a mountain; 50 miles E.S.E. of Colima.

MOTION, primarily so called, or *Local Motion*, is a continued and successive change of place; or that state of a body, by which it corresponds successively to several different places; or is present successively in different parts of space. Or, motion may be concisely defined as the change of rectilinear distance between two points.

In this sense the doctrine and laws of motion make the subject of mechanics, or statics. One of the ancient philosophers, when he was asked to give a description of motion, is said to have walked across the room, and to have replied, you see it, but what it is I cannot tell you.

The ancient philosophers considered motion in a more general and extensive manner: they defined it, a passage out of one state into another; and thus made six kinds of motion, viz. *creation, generation, corruption, augmentation, diminution, and lation, or local motion*.

Some of the later schoolmen reduce these six kinds of motion to four: the first is general, including any passage from one state to another; under which kind come *creation, production, and mutation*. The second is a passage of something already existing from one state to another; and thus *generation* is a motion. The third is a successive passage of something already existing from one term to another; and thus *alteration and accretion* are species of motion. The last is *lation, or local motion*; and thus *walking* is motion.

But the latest philosophers deny any other species beside *local motion*; and reduce all the sorts above mentioned to this one. So that we have here only to do with *lation, or local motion*; of which the rest are only so many different determinations or effects.

Physical writers, both ancient and modern, have ever been perplexed about the nature and definition of *local motion*. The Peripatetics define it by, *Actus entis in potentia, prout in potentia*, Arist. 3. Phys. cap. 2; but this notion seems too abstract and metaphysical for our days, and is of no use in explaining the properties of motion.

The Epicureans explain motion, by the migration of a body, or a part of a body from one place to another; on which definition the later Epicureans refine, and call it, the migration or passage of a body from space to space; thus substituting the word *space*, for that of *place*.

The Cartesians define motion, a passage or removal of one part of matter out of the neighbourhood of those parts immediately contiguous to it, into the neighbourhood of others. Which definition agrees, in effect, with that of the Epicureans: all the difference between them consisting in this; that what the one call *body and place*, the other call *matter and contiguous parts*.

Borelli, and other late writers after him, define motion, more accurately and fully, the successive passage of a body from one place to another, in a determinate time, by becoming successively contiguous to all the parts of the intermediate space.

Motion, then, is agreed to be the translation of a body from place to place; but authors differ much when they come to explain in what this translation consists. And hence their divisions of motion become exceedingly precarious. Aristotle, and the Peripatetics, divide all motion into *natural and violent*: the first is that which has its principle, or moving force, within the moving body. Such is that of a stone falling towards the centre of the earth. The second is that whose principle is without, and against which the moving body

makes a resistance. Such is that of a stone thrown upwards.

The moderns generally divide motion into *absolute* and *relative*. *Absolute* motion is the change of absolute place, in any moving body; whose celerity, therefore, will be measured by the quantity of absolute space which the moveable body runs through. *Relative* motion is a mutation of the relative or vulgar place of the moving body; and has its celerity estimated by the quantity of relative space run through.

Others divide motion into *proper*, and *improper*, or *foreign*. *Proper* motion is a removal out of one proper place into another, which thus becomes proper, as being possessed by this body alone, in exclusion of all others. Such is the motion of a wheel in a clock. *Improper, extraneous, foreign, or common* motion, is the passage of a body out of one common place into another common place. Such is that of a clock when moving in a ship, &c.

The reason of all this diversity seems to arise from the not attending to the different meanings of the words, but comprising all in one definition and division; which they should rather have distinguished into several parts.

Some, *e. gr.* in their definitions of motion, consider the moving body, not as it regards the adjacent bodies, but as it regards immovable and infinite space. Others, again, consider the moving body, not as it regards infinite space, but as it regards other bodies very remote.

And others, lastly, consider the moving body, not as it regards remote bodies, but that surface only to which it is contiguous.

But these various meanings being once settled, the dispute is terminated. For, as every thing that moves may be considered in these three several manners; there hence arise three several kinds of motions; of these, that which regards the parts of infinite immovable space, without consideration of the circumambient bodies, may be called *absolutely and truly proper motion*.

That which regards circumambient bodies very remote, which may themselves possibly be removed, we call *relatively common motion*.

The last, which regards the surfaces of the next contiguous bodies, inasmuch as it may want all both absolute and common motion, we call *relatively proper motion*.

MOTION, *Absolutely and truly proper*, then, is the application of a body to different parts of infinite and immovable space.

This alone is *proper* and *absolute* motion, being always generated and changed by forces impressed on the moving body itself, and by those only; and being that to which the real forces of all bodies to put others in motion by impulse are owing, and to which those motions are proportioned. But this motion we cannot investigate or determine accurately; nor can we distinguish, when two bodies are impelled on each other, in which of the two (*v. gr.* that which appears to move the more swiftly, or the other, which appears to move more slowly, and perhaps even to be at rest) the real motion, and, consequently, the real force whence the impulse arose, is placed; not being able to determine whether the centre of gravity of the whole system (which is but a point in infinite space) is itself at rest, or in motion.

MOTION, *Relatively common*, is a change of the situation of a body with respect to the other remote circumambient bodies: and this is the motion we speak of, when we say, that men, cities, and the earth itself move round the sun. This is also the motion we mean, when we estimate the quantity of motion, and the force any body has to impel another.



another. For instance, if a wooden sphere, filled with lead, to make it the heavier, be dropped from the hand; we are accustomed to estimate the quantity of motion, and the force which the sphere has to impel another, by the celerity of the sphere, and the weight of the included lead; and that truly with regard to the force itself, and the effect of it, as it falls under our senses. But whether the real power or motion be in the sphere which appears to strike, or in the earth which appears to be struck, that, as has been observed above, we cannot determine.

MOTION, *Relatively proper*, is the successive application of a body to the different parts of the contiguous bodies.

And this is the motion usually understood in physical disputes about the natures of particular things; as when we say, that heat, sound, fluidity, &c. consist in motion. This must be added, however, that by successive application of a body, its whole surface, taken together, must be conceived successively applied to different parts of the contiguous bodies.

From these several definitions of motion arise as many definitions of place: for when we speak of motion (or rest) *truly and absolutely proper*; then place is that part of infinite and immovable space which the body fills. When of motion *relatively common*; then place is a part of any space or moveable dimension. When of motion *relatively proper* (which is really very improper); place is then the surface of the next adjacent bodies, or sensible spaces.

The definition of rest is pretty well agreed on; but whether rest be a mere privation of motion, or any thing positive, is warmly disputed. Malebranche, and others, maintain the former side of the question; Cartes, and others, the latter. These last contend, that a body at rest has no power to persevere in that rest, nor to resist any bodies that would destroy it; and that motion may as well be called a cessation of rest, as rest of motion.

The main argument urged by the former is this: suppose a globe at rest, and suppose God cease to will its rest; what will be the consequence? it will rest still. Let it be in motion, and let God cease to will its motion; what will be the consequence? it will cease to move; that is, it will be at rest: because the power whereby a body in motion perseveres in that state, is the positive will of God; that whereby the quiescent body perseveres is only his privative will.

But this is a *petitio principii*: for the force or conatus by which bodies, whether moving or quiescent, persevere in those states, is the mere inactivity of matter; and, therefore, were it possible for God not to will any thing, a body already in motion would move for ever; as a body at rest would rest for ever. To this inactivity of matter it is owing, that all bodies resist according to their quantities of matter; and that any body striking another with any given velocity, will move it in the same proportion which its density, or quantity of matter, has to the density, or quantity of matter, of the other.

For want of a precise definition of the term motion, many authors have fallen into confusion, says Dr. Young, (Course of Lectures on Natural Philosophy, &c. vol. i.) with respect to *absolute and relative motion*. The definition of motion given, at the commencement of this article, as the change of rectilinear distance between two points, appears to be the definition of what is commonly called *relative motion*; but, on a strict examination, it will be found that what is usually called *absolute motion* is merely relative to some space, which is without motion, merely in our imagination. The space which we call quiescent is, in general, the earth's surface, but astronomy teaches us, that every point of the

earth's surface is perpetually in motion. Moreover, when we assert, that a body is absolutely at rest, we only mean to compare it with some large space in which it is contained; for that any body exists that is absolutely at rest, in as strict a sense as an absolutely straight line may be conceived to exist, no one can positively affirm; and if such a quiescent body did exist, we have no criterion by which it could be distinguished. Supposing a ship to move at the rate of three miles in an hour, and a person on board to walk, or to be drawn towards the stern at the same rate, he would be relatively in motion, with respect to the ship, yet we might very properly consider him as absolutely at rest; but he would, on a more extended view, be at rest only in relation to the earth's surface; for he would still be revolving round the axis of the earth, and with the earth round the sun, and with the sun and the whole solar system, he would be slowly moving among the starry worlds which surround them. Now, with respect to any effects within the ship, all the subsequent relations are of no consequence, and the change of his rectilinear distance from the various parts of the ship is the whole that needs to be considered in determining these effects. In the same manner, if the ship appear, by comparison with the water only, to be moving through it with the velocity of three miles an hour, and the water be moving at the same time in a contrary direction at the same rate, in consequence of a tide or current, the ship will be at rest with regard to the shore, but the mutual actions of the ship and the water will be the same as if the water were actually at rest, and the ship in motion. It is not sufficient, as our author proceeds, to observe the increase or decrease of distance of a moving point from another single point only; we must compare its successive situations with many other points surrounding it; and for this purpose, these points must be at rest among themselves, in order to be considered as belonging to a quiescent space or surface; which may be defined as a space or surface, of which all the points remain always at equal distances from each other, without any external influence. In this sense, we must call the deck of the ship a quiescent surface, whether the ship be at anchor or under sail; but we must not consider a surface revolving round a centre as a quiescent surface; for no such motion can exist without the influence of a centripetal force, which renders it improper for determining the affections of a moving body.

Motion has ever been esteemed a species of quantity; and its *quantum*, or greatness, which we otherwise call its *momentum*, is estimated partly from the length of the line which the moving body describes (as if a body pass over a line of a hundred feet, the quantity of its motion is greater than if it passed over only ten feet), and partly from the quantity of the matter moved together, or at the same time; *i. e.* not from the bulk or extension of the body, but from its mass or weight; the air, and other subtle matters, with which the pores are filled, not entering into the account: as if a body of two cubic feet run over a line of a hundred feet, the quantity of its motion is greater than that of a body of one cubic foot describing the same line: for whatever motion one whole has, that is had in one-half of the other; and the motion of the whole is the sum of the motion of all its parts. (See FORCE.) Hence it follows, that for two unequal bodies to have equal motions or momentums, the lines which they pass over must be in a reciprocal proportion of their masses or weights; *i. e.* if any body have three times the quantity of matter that another has, the line that it runs over must be one-third of the line run over by the other. If two bodies, then, fastened to the two extremities of a balance or lever, have their masses



in reciprocal ratio of their distances from the fixed point, whence these are moved, they must describe lines in a reciprocal ratio of these masses.

For instance, if the body A, (*Plate XXXIV. Mechanics, fig. 1.*) have three times the mass or weight of B, and each be fastened to the extremes of the lever A B, whose fulcrum or fixed point is C, in such manner as that the distance B C is thrice the distance C A, the lever cannot incline either way, but the space which the less body moves, B E, will be thrice the space A D, which the greater moves: so that their motions will be equal. Nor is there any reason why the body A, tending downwards, *v. gr.* with four degrees of motion, should raise the body B, rather than B, tending downwards likewise, with the same four degrees of motion, should raise the body A: they will therefore be in equilibrium. On which foundation depends the whole doctrine of mechanics.

Hence that great proverb of Archimedes, with any given power, how small soever, to raise any weight given, how great soever. For by increasing the distance C B infinitely, the power of the body B will be increased infinitely.

It is allowed on all hands, that motion is no essential attribute of matter: and hence arises a dispute about its production, and to what cause its continuation is owing.

MOTION, for the general Laws of, see *Laws of NATURE.*

MOTION, Quantity of, whether always the same? The Cartesians maintain, that the Creator at the beginning impressed a certain quantity of motion on bodies; and that under such laws, as that no part of it should be lost, but the same portion of motion should be constantly preserved in matter: and hence they conclude, that if any moving body strike on any other body, the former loses no more of its motion than it communicates to the latter.

This principle sir Isaac Newton overturns in the following words: "From the various compositions of two motions, it is manifest there is not always the same quantity of motion in the world; for if two balls, joined together by a slender wire, revolve with an uniform motion about their common centre of gravity, and at the same time that centre be carried uniformly in a right line drawn in the plane of their circular motion, the sum of the motions of the two balls as often they are in a right line, drawn from their common centre of gravity, will be greater than the sum of their motions when they are in a line perpendicular to that other. Whence it appears, that motion may be both generated and lost. But by reason of the tenacity of fluid bodies, and the friction of their parts, with the weakness of the elastic power in solid bodies, nature seems to incline much rather to the destruction than the production of motion; and in reality, motion becomes continually less and less. For bodies which are either so perfectly hard, or so soft, as to have no elastic power, will not rebound from each other: their impenetrability will only stop their motion. And if two such bodies, equal to each other, be carried with equal, but opposite motions, so as to meet in a void space, by the laws of motion they must stop in the very place of concourse, lose all their motion, and be at rest for ever; unless they have an elastic power to give them a new motion. If they have elasticity enough to enable them to rebound with  $\frac{1}{2}$ , or  $\frac{1}{3}$ , or  $\frac{1}{4}$ , of the force wherewith they meet, they will lose  $\frac{1}{2}$ , or  $\frac{1}{3}$ , or  $\frac{1}{4}$ , of their motion. And this is confirmed by experiments: for if two equal pendulums be let fall from equal heights, so as to strike full on each other; if those pendulums be of lead, or soft clay, they will lose all, or almost all their motion; and if they be of any elastic matter, they will only retain so much motion as they receive from their elastic power." If it be asked,

how it happens, that motion being thus continually lost, should be continually renewed again: the same author adds, that it is renewed from some active principles, "such as the cause of gravity, whereby the planets and comets preserve their motions in their orbits, and all bodies acquire a great degree of motion in falling; and the cause of fermentation, whereby the heart and blood of animals preserve a perpetual warmth and motion; the inner parts of the earth are kept continually warmed; many bodies burn and shine; and the sun himself burns and shines, and with his light warms and cheers all things:" (as also from the cause of elasticity, by which bodies restore themselves into their former figures,) "for we find but little motion in the world, except what plainly flows, either from these active principles, or from the command of the willer." The preservation of the same quantity of motion in the universe, was a principle laid down universally by Des Cartes; but has been found false, and holds true only in the same direction, which is thus expressed by sir Isaac Newton: "the quantity of motion, which is collected by taking the sum of the motions directed towards the same parts, and the difference of those that are directed to contrary parts, suffer no change from the action of bodies among themselves." *Newt. Princip. lib. i.* See *COLLISION.*

Some philosophers, after Des Cartes, have supposed the preservation of the same force or *vis viva*. See the articles *FORCE* and *VIS VIVA*.

But this holds only in elastic bodies, when there is a shock; and hence those philosophers have been led to maintain, that all bodies were elastic, at least in their elements, and that an inflexible body was impossible, being repugnant to the law of continuity. See *CONTINUITY.*

MOTION, As to the continuation of, or the cause why a body once in motion comes to persevere in it: this has been extremely controverted among physical writers: and yet it follows very evidently, from one of the grand laws of nature; *viz.* that all bodies persevere in their present state, whether of rest or motion, unless disturbed by some foreign powers. Motion, therefore, once begun, would be continued *in infinitum*, were it to meet with no interruption from external causes; as the power of gravity, the resistance of the medium, &c. So that Aristotle's principle, every thing in motion affects rest, is groundless. Nor has the communication of motion, or the manner how a moving body comes to affect another at rest, or how much of its motion is communicated by the first to the last, been less disputed. See the laws of it under the words *COLLISION* and *PERCUSSION.*

MOTION, we have observed, is the subject of mechanics; and mechanics is the basis of all natural philosophy, which hence becomes denominated *mechanical*.

In effect, all the phenomena of nature, all the changes that happen in the system of bodies, are owing to motion; and are directed according to its laws.

Hence, the modern philosophers have applied themselves with peculiar ardour to consider the doctrine of motion; to investigate the properties, laws, &c. of it; by observation, experiment, and the use of geometry. And to this we owe the great advantages of the modern philosophy above that of the ancients; who were extremely regardless of motion; notwithstanding that they seemed so sensible of its importance, that they defined nature by the first principle of motion; and rest of the substance in which it is.

Among all the ancients there is nothing extant on motion, excepting some things in Archimedes's books, "*De Aequiponderantibus.*" To Galileo a great part of the doctrine of motion is owing; he first discovered the general laws of motion, and particularly of the descent of heavy bodies,

both



## MOTION.

both at liberty and on inclined planes; the laws of the motion of projectiles; the vibrations of pendulums, and stretched chords, with the theory of resistances, &c. which were things of which the ancients had little notion.

His disciple, Torricelli, polished and improved the discoveries of his master; and added to them divers experiments concerning the force of percussion, and the equilibrium of fluids. M. Huygens improved very considerably on the doctrine of the pendulum; and both he and Borelli on the force of percussion. Lastly, Newton, Leibnitz, Varignon, Mariotte, &c. have brought the doctrine of motion still much nearer to perfection.

The general laws of motion were first brought into a system, and analytically demonstrated together, by Dr. Wallis, Sir Christopher Wren, and M. Huygens, all much about the same time: the first in bodies not elastic, and the two last in elastic bodies. Lastly, the whole doctrine of motion, including all the discoveries both of the ancients and moderns on that head, was given by Dr. Wallis in his "Mechanica, sive de Motu," published in 1670. See MECHANICS.

MOTION may be considered either as *equable*, and *uniform*; or as *accelerated*, and *retarded*. *Equable* motion, again, may be considered either as *simple*, or as *compound*; and *compound* motion either as *rectilinear*, or as *curvilinear*.

And all these, again, may be considered either with regard to themselves, or with regard to the manner of their production, and communication, by percussion, &c.

MOTION, *Equable*, is that in which the moving body proceeds with the same unintermitting velocity.

The laws of *equable* motion are as follow: the reader being only to observe, by the way, that *mass*, or quantity of matter, is expressed by *M*; *momentum*, or the quantity of motion or impetus, by *I*; *time*, or the duration of motion, by *T*; *velocity*, or its swiftness, by *V*; and *space*, or the line it describes, by *S*.

Thus, if the space be = *s*, and the time = *t*; the velocity will be expressed by  $\frac{s}{t}$ . And if the velocity = *v*, and

the mass = *m*; the momentum will likewise be = *vm*.

MOTION, *Law of uniform or equable*. 1. The velocities *V* and *v* of two bodies, moving equably, are in a ratio compounded of the direct ratio of the spaces *S* and *s*, and the reciprocal ratio of the times *T* and *t*.

$$\text{For } V = \frac{S}{T}, \text{ and } v = \frac{s}{t} :$$

$$\text{Therefore, } V : v :: \frac{S}{T} : \frac{s}{t} .$$

And  $V : v :: St : sT$ : consequently  $VsT = vSt$ .

This, and the following theorems, may be illustrated in numbers, thus: suppose a body A, whose mass is as 7, that is 7 pounds, in the time of 3 seconds, passes over a space of 12 feet; and another body B, whose mass is as 5, in the time of 8 seconds, passes over a space of 16 feet: we shall then have *M* = 7, *T* = 3, *S* = 12, *m* = 5, *t* = 8, *s* = 16. And therefore *V* = 4, *v* = 2. The case then will stand thus:

$$V : v :: St : sT .$$

$$4 : 2 :: 12 \times 8 : 16 \times 3 :: 4 : 2 .$$

Hence, if *V* = *v*, then will *St* = *sT*; therefore *S* : *s* :: *T* : *t*. That is, if two bodies move equably, and with the same velocities, their spaces are as the times.

The corollaries may be illustrated by numbers, in like

VOL. XXIV.

manner as the theorems. Thus, suppose *S* = 12, *T* = 6, *s* = 8, *t* = 4. Then will  $V = \frac{12}{6} = 2$ , and  $v = \frac{8}{4} = 2$ .

Consequently *V* being = *v*

$$S : s :: T : t$$

$$12 : 8 :: 6 : 4$$

If *T* = *t*, *Vs* = *vS*, and *S* : *s* :: *V* : *v*; i. e. the spaces will be as the velocities.

If *V* = *v*, and also *t* = *T*, then will *S* = *s*; and so the bodies, moving equably, will describe equal spaces in equal times.

2. The spaces *S* and *s*, over which two bodies pass, are in a ratio compounded of the ratio of the times *T* and *t*, and of the velocities *V* and *v*,

$$\text{For } V : v :: St : sT$$

$$\text{Therefore } VsT = vSt$$

$$\text{And } S : s :: VT : vt .$$

$$\text{In numbers, } 12 : 16 :: 4 \times 3 : 2 \times 8 :: 12 : 16 .$$

Hence, if *S* = *s*, *VT* = *vt*, so that *V* : *v* :: *t* : *T*. That is, if two bodies, moving equably, describe equal spaces, their velocities will be in a reciprocal ratio of their times. In numbers, if we suppose *S* = 12, and *s* = 12. Because *S* = *VT*, and *s* = *vt*; if *V* = 2 and *v* = 3, *T* = 6, and *t* = 4.

$$\text{So that we have } V : v :: t : T$$

$$2 : 3 :: 4 : 6$$

Farther, if *t* = *T*, then will *V* = *v*; and therefore bodies, which move equably, describe equal spaces in equal times, and have their velocities equal.

If *V* : *v* :: *T* : *t*; then *Vt* = *vT*; and multiplying the equal quantities *VsT* and *vSt*, by *Tt*, and dividing the products by *Vt* and *vT*, we shall have *sTT* = *Stt*; and *S* : *s* :: *TT* : *tt*, or the spaces as the squares of the times.

3. The momenta, or quantities of motion, of two bodies, moving equably, *I* and *i*, are in a ratio compounded of the velocities *V* and *v*, and the masses or quantities of matter *M* and *m*.

For *I* = *VM*, and *i* = *vm*; therefore *I* : *i* :: *VM* : *vm*; that is, the ratio of *I* to *i* is compounded of the ratio of *V* to *v*, and of *M* to *m*.

If *I* = *i*, then will *VM* = *vm*; and therefore *V* : *v* :: *m* : *M*. That is, if the momenta of two bodies, moving equably, be equal; the velocities will be in a reciprocal ratio of their masses.

And therefore if *M* = *m*, *V* = *v*; that is, if the momenta and masses of two moving bodies be equal, their velocities are also equal.

4. The velocities *V* and *v* of two bodies, moving equably, are in a ratio compounded of the direct ratio of their momenta *I* and *i*, and the reciprocal one of their masses *M* and *m*.

$$\text{Since } I : i :: VM : vm$$

$$Ivm = iVM$$

$$\text{Therefore } V : v = Im : iM .$$

$$\text{In numbers, } 4 : 2 :: 28 \times 5 : 10 \times 7 :: 4 \times 1 : 2 \times 1 :: 4 : 2 .$$

Hence, if *V* = *v*, then *Im* = *iM*; and therefore *I* : *i* :: *M* : *m*; that is, if two bodies move equably, and with the same velocity, their momenta will be in the same ratio with their masses. If *M* = *m*, *I* = *i*; and therefore if two bodies that have the same masses move equably, and with equal velocity, their momenta are equal.

5. In an equable motion, the masses of the bodies *M* and *m* are in a ratio compounded of the direct ratio of their

K k

their



their momenta, and the reciprocal ratio of their velocities  $V$  and  $v$ .

$$\text{For since } I : i :: VM : vm \\ I vm = i VM$$

$$\text{Therefore } M : m = Iv : iV$$

In numbers,  $7 : 5 :: 28 \times 2 : 10 \times 4 :: 7 \times 1 : 5 \times 1 :: 7 : 5$ .

If  $M = m$ , then will  $Iv = iV$ ; and therefore  $I : i = V : v$ . That is, if two bodies, moving equably, have their masses equal, their momenta will be as their velocities.

In numbers, suppose  $I = 12$ ,  $i = 8$ ,  $M = 4$ ,  $m = 4$ ;

$$\text{then will } V = \frac{12}{4} = 3, \text{ and } v = \frac{8}{4} = 2.$$

$$\text{Therefore } I : i :: V : v. \\ 12 : 8 :: 3 : 2.$$

6. In an equable motion, the momenta  $I$  and  $i$  are in a ratio compounded of the direct ratios of the masses  $M$  and  $m$ , and the spaces  $S$  and  $s$ , and the reciprocal ratio of the times  $T$  and  $t$ .

$$\text{For because } V : v :: St : sT \\ \text{And } I : i :: VM : vm$$

$$\text{Therefore } VI : vi :: VMSt : vmsT$$

$$\text{And } I : i :: MSt : msT.$$

Hence, if  $I = i$ , then will  $MSt = msT$ ; and therefore  $M : m :: sT : St$ ,  $S : s :: mT : Mt$ , and  $T : t :: MS : ms$ ; that is, if two bodies, moving equably, have their momenta equal, 1. Their masses are in a ratio compounded of the direct ratios of the times, and the reciprocal one of their spaces. 2. Their spaces are in a ratio compounded of the direct ratio of the times, and the reciprocal one of their masses. 3. Their times are in a ratio compounded of their masses, and their spaces.

Farther, if  $M = m$ , then will  $sT = St$ ; and therefore  $S : s = T : t$ ; that is, if two bodies, moving equably, have their momenta and their masses equal, their spaces are as their times.

Again, if  $T = t$ , then will  $S = s$ . The two moving bodies, therefore, whose masses and momenta are equal, describe equal spaces in equal times.

If besides  $I = i$ ,  $S = s$ , then will  $mT = Mt$ ; and therefore  $M : m :: T : t$ ; that is, if two moving bodies, whose momenta are equal, pass over equal spaces, their masses are proportionable to their times.

Farther, if  $T = t$ , then will  $M = m$ ; and therefore bodies, whose momenta are equal, and which, moving equably, describe equal spaces in equal times, have their masses equal.

If besides  $I = i$ ,  $T = t$ ; then will  $MS = ms$ ; and therefore  $S : s :: m : M$ ; that is, the spaces passed over in the same time, by two moving bodies, whose momenta are equal, are in a reciprocal ratio of their masses.

7. In an equable motion, the spaces  $S$  and  $s$  are in a ratio compounded of the direct ratios of the momenta  $I$  and  $i$ , and times  $T$  and  $t$ , and the reciprocal one of the masses  $M$  and  $m$ .

$$\text{For because } I : i :: MSt : msT,$$

$$I msT = i MSt.$$

$$\text{Wherefore } S : s :: ITm : iTM.$$

In numbers,  $12 : 16 :: 3 \times 28 \times 5 : 8 \times 10 \times 7 :: 3 \times 4 \times 1 : 8 \times 2 \times 1 :: 12 : 16$ .

Hence, if  $S = s$ ,  $ITm = iTM$ ; and therefore  $I : i ::$

$tM : Tm$ ,  $M : m :: IT : it$ ,  $T : t :: iM : Im$ . If two bodies, therefore, move equably over equal spaces, 1. Their momenta will be in a ratio compounded of the direct ratio of the masses, and the reciprocal one of the times. 2. Their masses will be in a ratio compounded of the momenta, and the times. 3. The times will be in a ratio compounded of the direct ratio of the masses, and the reciprocal one of the momenta.

If beside  $S = s$ ,  $M = m$ ; then will  $IT = it$ ; and therefore  $1 : i :: t : T$ . That is, bodies whose masses are equal, have their momenta reciprocally proportionable to the times in which they move over equal spaces.

If besides  $S = s$ ,  $T = t$ ; then will  $iM = Im$ ; and  $I : i :: M : m$ ; and therefore two bodies, moving equably, and through equal spaces in equal times, have their momenta proportionable to their masses.

8. Two bodies, moving equably, have their masses  $M$  and  $m$ , in a ratio compounded of the direct ratios of the momenta  $I$  and  $i$ , and the times  $T$  and  $t$ , and the reciprocal one of the spaces  $s$  and  $S$ .

$$\text{For because } I : i :: MSt : msT, I msT = i MSt.$$

$$\text{Wherefore } M : m :: ITs : iTS.$$

In numbers,  $7 : 5 :: 3 \times 28 \times 16 : 8 \times 10 \times 12 :: 3 \times 7 \times 2 : 1 \times 10 \times 3 :: 7 : 5$ .

Hence, if  $M = m$ , then will  $ITs = iTS$ ; and therefore  $I : i :: tS : Ts$ ,  $S : s :: IT : it$ , and  $T : t :: iS : Is$ . That is, in two moving bodies, whose masses are equal; 1. The momenta are in a ratio compounded of the direct ratio of the spaces, and the reciprocal one of the times. 2. The spaces are in a ratio compounded of the momenta and the times. 3. The times are in a ratio compounded of the direct ratio of the spaces, and the reciprocal one of the momenta. If beside  $M = m$ ,  $T = t$ , then will  $iS = Is$ ; and therefore  $I : i :: S : s$ . That is, the momenta of two bodies, whose masses are equal, are proportional to the spaces passed over in equal times.

9. In equable motions, the times  $T$  and  $t$  are in a ratio compounded of the direct ratios of the masses  $M$  and  $m$ , and the spaces  $S$  and  $s$ , and the reciprocal one of the momenta  $I$  and  $i$ .

$$\text{For because } I : i :: MSt : msT, I msT = i MSt.$$

$$\text{Wherefore } T : t :: iMS : ImS.$$

Hence, if  $T = t$ ,  $iMS = ImS$ , and therefore  $I : i :: MS : ms$ ,  $M : m :: Is : iS$ , and  $S : s :: Im : iM$ . That is, if two bodies, moving equably, describe equal spaces in equal times; 1. Their momenta will be in a ratio compounded of the masses and the spaces. 2. Their masses will be in a ratio compounded of the direct ratio of the momenta, and the reciprocal one of the spaces. 3. The spaces will be in a ratio compounded of the direct ratio of the momenta, and the reciprocal one of the masses.

MOTION, *Accelerated*, is that which continually receives fresh accessions of velocity. It is said to be *uniformly accelerated*, when in equal times its accessions of velocity are equal.

MOTION, *Retarded*, is that whose velocity continually decreases. It is said to be *uniformly retarded*, when its decrease is continually proportional to the time.

MOTION, *Laws of, uniformly accelerated and retarded*. It is an axiom, that a body once at rest will never move, unless some other body put it in motion: and when once in motion, it will continue for ever to move with the same velocity, and in the same direction, unless it be forced from its state by some other cause. This is evident from that fundamental axiom in philosophy, that nothing happens without a sufficient cause.

It follows, that a body, moved by one only impulse, must proceed



proceed in a right line. If then it be carried in a curve, it must be acted on by a double power; one, whereby it would proceed in a right line; another, whereby it is continually drawn out of it.

If the action and re-action of two (*unelastic*) bodies be equal, there will no motion ensue; but the bodies, after collision, will remain at rest, by each other.

If a moving body be impelled in the direction of its motion, it will be accelerated; if by a resisting force, it will be retarded. Heavy bodies descend with an accelerated motion.

10. If a body move with an uniform accelerated velocity, the spaces will be in a duplicate ratio of the times.

For, let the velocity acquired in the time  $t$  be  $= v$ , then will the velocity acquired in the time  $2t = 2v$ , in the time  $3t = 3v$ , &c. and the spaces corresponding to those times,  $t, 2t, 3t$ , &c. will be as  $vt, 4vt, 9vt$ , &c. The spaces therefore are as 1, 4, 9, &c. and the times as 1, 2, 3, &c. that is, the spaces are in a duplicate ratio of the times. Hence, in a motion uniformly accelerated, the times are in a subduplicate ratio of the spaces.

11. The spaces passed over by a body uniformly accelerated, increase, in equal times, according to the unequal numbers 1, 3, 5, 7, &c.

For, if the times wherein a moving body, equally accelerated, proceeds, be as 1, 2, 3, 4, 5, &c. the space passed over in one moment will be as 1, in 2 moments as 4, in 3 as 9, in 4 as 16, in 5 as 25, &c. (*Law 10*). If, therefore, you subtract the space passed over in one moment, viz. 1, from that passed over in two moments, 4, there will remain the space corresponding to the second moment, viz. 3. In the same manner may be found the space passed over in the third moment,  $9 - 4 = 5$ . The space corresponding to the fourth moment,  $16 - 9 = 7$ ; and so of the rest. The space of the first moment, therefore, is as 1, that of the second as 3, that of the third as 5, of the fourth as 7, of the fifth as 9, &c. Therefore the spaces passed over by a body, moving with an uniformly accelerated motion in equal times, increase according to the unequal numbers, 1, 3, 5, 7, 9, &c.

12. The spaces passed over by a body equally accelerated are in a duplicate ratio of the velocities.

For, supposing the velocities to be  $V$  and  $v$ , the times  $T$  and  $t$ , and the spaces  $S$  and  $s$ ; then will  $V : v :: T : t$ . Wherefore, since  $S : s :: T^2 : t^2$  (*Law 10*),  $S : s :: V^2 : v^2$ .

Wherefore, in a motion uniformly accelerated, the velocities are in a subduplicate ratio of the spaces.

13. Heavy bodies descend with an uniformly accelerated motion, in a medium void of resistance, if the spaces be not very great. For, since heavy bodies descend with an accelerated velocity, the power of gravity must continually impel them. But the power of gravity is found the same at all distances from the earth where the experiment can be made. Therefore heavy bodies must be driven downwards in the same manner in equal times. If then, in the first moment of time, they be impelled with the velocity  $v$ , they will be impelled with the same velocity  $v$  in the second moment, and with the same in the third, fourth, &c. moments. Now the medium being supposed void of all resistance (by *Hypoth.*) they will still retain the velocity they acquire; and by reason of their equal fresh acquisitions every minute, they will descend with a motion uniformly accelerated.

Hence, the spaces of descent are in a duplicate ratio of their times, and also of their velocities, and the increase according to the uneven numbers 1, 3, 5, 7, 9, &c.

The times, and likewise the velocities, are in a subdupli-

cate ratio of the spaces. See the laws of accelerated motion, otherwise illustrated and evinced under ACCELERATION, and *Laws of the DESCENT of bodies*.

14. If a heavy body fall through a medium void of resistance, and from a height not very great; the space it passes over is the subduplie of that which it would pass over by an uniform motion in the same time, with the velocity it has acquired at the end of its fall.

For, let the right line  $AB$  (*Plate XXXIV. Mechanics, fig. 2.*) represent the whole time of a heavy body's descent; and let this be divided into any number of equal parts; to the abscisses  $AP, AQ, AS, AB$ , draw the right lines  $PM, QI, SH, BC$ , which may be as the velocities acquired, in those times, in the descent. Since then  $AP : AQ :: PM : QI, AP : AS :: PM : SH$ , &c. (*Eucl. VI. 2.*) If then the altitude of the triangle  $ABC$  be conceived to be divided into equal parts infinitely small; the motion being uniform in a moment of time infinitely small; the little area  $PpMm = Pp \times PM$  may be considered as the space passed over in the little moment of time  $Pp$ . Therefore the space passed over in the time  $AB$ , will be as the sum of all the little areas, i. e. as the triangle  $ABC$ . But the space that would be described in the same time  $AB$  with the uniform velocity  $BC$ , being as the rectangle  $ABCD$ , it will be to the other space as 2 to 1. (*Eucl. I. 41*).

Hence the space passed over in half the time  $AB$ , with the velocity  $BC$ , is equal to the space which the heavy body passes over from a state of rest in the whole time  $AB$ .

Hence, also, the time wherein a heavy body falls from any given altitude being given; it is easy to determine the spaces it passes over in each part of that time. For the method of doing this, see *Laws of the DESCENT of bodies*.

15. If a body proceed with a motion uniformly retarded, it will pass over half the space which it would describe in the same time by an equable motion.

For, suppose the given time divided into any number of equal parts; and draw the right lines  $BC, SH, QI, PM$ , thereto, which are to be as the velocities corresponding to the parts of time,  $BS, BQ, BP, BA$ ; so as letting fall the perpendiculars  $HE, IF, MG$ , the right lines  $CE, CF, CG, CB$ , may be as the velocities lost in the times,  $HE, FI, GM, AB$ ; that is,  $BS, BQ, BF, BA$ . Since  $CE : CF :: EH : FI, CG : CB :: GM : BA$ ,  $ABC$  will be a triangle (*Eucl. III. 17*). If  $Bb$ , therefore, be a moment of time infinitely small, its motion will be uniform; and therefore the space described by the moving body will be as the little area  $BbCc$ . The space, therefore, described in the time  $AB$  is as the triangle  $ABC$ : viz. as the sum of all the little areas  $BbCc$ . Now the space described by the body moving uniformly with the velocity  $BC$  in the time  $AB$ , is as the rectangle  $ABCD$ : therefore the former is half of this. *Eucl. I. 41*.

16. The spaces described by a motion uniformly retarded, in equal times, decrease according to the unequal numbers 7, 5, 3, 1.

For, supposing the moving body in the first instant of time to pass over seven feet; I say, that in the second, if it be equally retarded, it will pass over 5; in the third, 3; and in the fourth, 1. For, let the equal parts of the axis of the triangles  $BS, SQ, QP, PA$ , be as the times; the semi-ordinates  $BC, SH, QI, PM$ , as the velocities at the beginning of any time; the trapezia  $BShC, SQIH, QPMI$ , and the triangle  $PAM$ , as the spaces described in those times. Let then  $BC = 4$ , and  $BS = SQ = QP = PA = 1$ . Then will  $SH = 3, QI = 2, PM = 1$ , (*Law 13*.)  $BShC = (4 + 3) 1 : 2 = \frac{7}{2}, SQIH =$   
K k 2 (3 + 2)



$(3 + 2) : 1 : 2 = \frac{5}{2}$ ,  $QPMI = (2 + 1) : 1 : 2 = \frac{3}{2} PAM = \frac{1}{2}$ . Consequently the spaces described in equal times are as  $1, \frac{5}{2}, \frac{9}{2}, \frac{13}{2}$ , that is, as 7, 5, 3, 1.

For the cause, &c. of the acceleration of motion, see GRAVITY, and ACCELERATION.

For the cause, &c. of the retardation, see RESISTANCE, and RETARDATION.

The laws according to which motion is communicated by the collision and percussion of bodies, are very different, as the bodies are either elastic or unelastic, and as the direction of the stroke is either oblique or direct. See COLLISION and PERCUSSION.

MOTION, *Simple*, is that produced by some one power.

MOTION, *Compound*, is that produced by several conspiring powers. (See COMPOUND, and COMPOSITION of motion.) Powers are said to *conspire*, when the direction of the one is not opposite to that of the other; as when the radius of a circle is imagined to whirl round on its centre, and a point in the same radius is at the same time supposed impelled straight along it.

All *curvilinear* motion is compound; as all *simple* motion is rectilinear.

17. If a moving body (*Plate XXXIV. Mechanics, fig. 3.*) be acted on by a double power; the one according to the direction *AB*, the other according to *AC*; with the motion compounded of both it will describe the diagonal of a parallelogram *AD*; whose sides *AB* and *AC* it would have described in the same time, with each of the respective powers apart.

For, if the body *A* were only acted on by the force impressed along *AB*; in the first instant of time it would be in some point of the right line *AB*, as in *H*, and so in the line *HL* parallel to *AC*; if it were only acted on by the power impressed in the direction *AC*, it would in the same instant of time be in some point of the line *AC*, as in *I*, and so in the line *IL* parallel to *AB*. But since the directions of the powers are not opposite to each other, neither of them can impede the other; and therefore the body in the same instant of time will arrive both at the lines *HL* and *IL*; and will consequently be in the point *L*, where the two meet. In the same manner it appears, that if *KM* and *MG* be drawn parallel to *AB* and *AC*, the body in the second instant of time will be in *M*, and at length in *D*. *Q. E. D.*

This important law of motion may be further illustrated by supposing the space *EFGH*, (*Plate XXXIV. Mechanics, fig. 4.*) to be carried uniformly forward in the direction *AB*, and with a velocity represented by *AB*. Let a motion in the direction *AD*, and measured by the right line *AD*, be impressed upon the body *A* in the space *EFGH*. To those who are in this space, the body *A* will appear to move in the right line *AD*; but its real or absolute motion will be in the diagonal *AC* of the parallelogram *ABCD*; and it will describe *AC* in the same time that the space by its uniform motion, or any point of it, is carried over a right line equal to *AB*, or that the body *A*, by its motion across the space, describes *AD*. For it is manifest, that the line *AD*, in consequence of the motion of the space, is carried into the situation *BC*, and the point *D* to *C*; so that the body *A* really moves in the diagonal *AC*. This law may also be confirmed by an experiment in the following manner: let there be a wooden square *ABCD*, (*fig. 5.*) so contrived, as to have the part *BEFC* made to draw out or push into the square at pleasure. To this part let the pulley *H* be joined, so as to turn freely on an axis, which will be at *H* when the piece is pushed in, and at *b* when it is drawn out. To this part let the ends of a straight wire *k* be

fixed, so as to move along with it, under the pulley; and let the ball *G* be made to slide easily on the wire. A thread *m* is fixed to this ball, and goes over the pulley to *I*: by this thread the ball may be drawn up on the wire, parallel to the side *AD*, when the part *BEFC* is pushed as far as it will go into the square. But if this part be drawn out, it will carry the ball along with it, parallel to the bottom of the square *DC*. By this means, the ball *G* may either be drawn perpendicularly upward by pulling the thread *m*, or moved horizontally along by pulling out the part *BEFC*, in equal times, and through equal spaces; each power acting equally and separately upon it. But if, when the ball is at *C*, the upper end of the thread be tied to the pin *I*, in the corner *A* of the fixed square, and the moveable part *BEFC* be drawn out, the ball will then be acted on by both the powers together: for it will be drawn up by the thread towards the top of the square, and, at the same time, carried with its wire *k* towards its right hand *BC*, moving all the while in the diagonal line *L*; and will be found at *g* when the sliding part is drawn out as far as it was before; which then will have caused the thread to draw up the ball to the top of the inside of the square, just as high as it was before, when drawn up singly by the thread without moving the sliding part.

The converse of this law is, that the motion in the diagonal *AC*, (*fig. 4.*) may be resolved into the motions in the sides of the parallelograms *AB* and *AD*. For it is manifest, that if *AK* (*fig. 6.*) be taken equal to *AD* with an opposite direction, and the parallelogram *AKBC* be completed, the right line *AB* shall be the diagonal of this parallelogram; consequently, the motion *AC*, compounded with the motion *AK* equal and opposite to the motion *AD*, produces the motion *AB*; that is, if from the motion *AC*, in the diagonal, you subtract the motion *AD* in one of the sides, there will remain the motion *AB* in the other side of the parallelogram *ABCD*.

This doctrine will receive farther illustration by resolving each of the motions *AB* and *AD* into two motions, one in the direction of the diagonal *AC*, and the other in the direction perpendicular to it: that is, by resolving (*Plate XXXIV. Mechanics, fig. 7.*) the motion *AB* into the motions *AM* and *AN*, and motion *AD* into the motions *AK* and *AL*. For the triangles *ADK* and *BCM* being equal and similar, *DK* is equal to *BM*, or *AL* to *AN*; so that the motions *AL* and *AN*, being equal and opposite, destroy each other's effect: and it being an obvious and general principle, that the motion of a body in a right line is no way affected by any two equal powers or motions that act in directions perpendicular to that line, and opposite to each other, it thus appears how the body *A* is determined to move in the diagonal *AC*; and because *AK* is equal to *MC*, it appears how the remaining motions *AM* and *AK* are accumulated in the direction *AC*, so as to produce a motion measured by *AC*. It appears likewise, how absolute motion is lost in the composition of motion; for the parts of the motions *AB* and *AD* that are represented by *AN* and *AL*, being equal and opposite, destroy each other's effect, and the other parts *AM* and *AK*, only, remain in the direction of the compounded motion *AC*: while, on the contrary, in the resolution of motion, the quantity of absolute motion is increased, the sum of the motions *AB* and *AD*, or *BC*, being greater than the motion *AC*. But the sum of the motions, estimated in a given direction, is no way affected by the composition or resolution of motion, or indeed by any actions or influences of bodies upon each other, that are equal and mutual, and have opposite directions.

For suppose that (*Plate XXXIV. Mechanics, fig. 8.*) the motions



motions are to be estimated in the direction  $AP$ ; let  $CP$ ,  $BR$ ,  $DQ$ , be perpendicular to this direction in the points  $P$ ,  $R$ , and  $Q$ ; then the motions  $AC$ ,  $AB$ ,  $AD$ , reduced to the direction  $AP$ , are to be estimated by  $AP$ ,  $AR$ , and  $AQ$  respectively, the parts which are perpendicular to  $AP$  having no effect in that direction. Let  $AP$  meet  $BC$  in  $S$ ; then because  $RP$  is to  $SP$ , as  $BC$  (or  $AD$ ) to  $CS$ , that is, as  $AQ$  to  $SP$ , it follows that  $AQ$  is equal to  $RP$ ; and that  $AR + AQ$  is equal to  $AP$ ; that is, that the sum of the motions  $AB$  and  $AD$ , reduced to any given direction  $AP$ , is equal to the compounded motion  $AC$  reduced to the same direction. From which it is obvious, that, in general, when any number of motions are compounded together, or are resolved, the sum of their motions continues invariably the same, till some foreign influence affects them.

From the above reasoning it is plain that since about every right line, as  $AD$ , (*fig. 3.*) a parallelogram, as  $ABCD$ , may be constructed, by making two equal triangles  $ACD$  and  $ABD$ , on one common base  $AD$ ; every rectilinear motion, when it may be of service for the demonstration, may be considered as a compound one. But as the proportion of the sides  $AC$  and  $CD$  may be various, so also may the right line  $AD$  be described by a motion compounded in various ways; and therefore the same rectilinear motion may be reduced to various compound motions.

Hence, if a moveable body be drawn by three several powers, according to the directions  $BA$ ,  $AD$ , and  $AC$ , (*fig. 9.*) two of which taken together are equivalent to the third; they will be to each other as the right lines  $DC$ ,  $DA$ ,  $DB$ , parallel to their directions; that is, reciprocally as the sines of the angles included between the lines of their directions, and the line of direction of the third:  $DB$  being to  $AD$  as the sine of the angle  $BAD$  to the sine of the angle  $ABD$ .

19. In an equable compound motion, the velocity produced by the conspiring powers is, to the velocity of each of the two apart, as the diagonal  $AD$  (*fig. 3.*) of the parallelogram  $ABDC$ , in the direction of whose sides they act, to either of those sides  $AB$  or  $AC$ .

For in the same time that one of the powers will carry it over the side of the parallelogram  $AB$ , and the other over  $AC$  separately, joined together they carry it over the diagonal  $AD$ . The diagonal  $AD$ , therefore, is the space described by the conspiring powers in the same time: but in an equable motion the velocities in the same time are as the spaces: the velocities therefore arising from the conspiring forces are to the velocity arising from either force, as  $AD$  to  $AB$  or  $AC$ .

Hence the conspiring forces thereof being given; *i. e.* the ratio of the velocities being given by the lines  $AB$  and  $AC$  given in magnitude, and the direction through those lines being given in position, or by the angle of direction; the celerity and direction of the oblique motion is given; because the diagonal is given both in magnitude and position.

The oblique motion however being given; the simple ones are not, *vice versa*, given; because the same oblique motion may be compounded of various simple ones.

20. In a compound motion produced by the same forces, the velocity is greater, if the angle of direction be less; and less, if it be greater.

For let the greater angle of direction be  $BAC$  (*fig. 10.*) the less  $FAC$ ; since the powers are supposed the same,  $AC$  will be common to each parallelogram  $AFCE$  and  $BACD$ , and besides  $AB = AF$ . Now it is evident, that, in the case of the greater angle, the diagonal  $AD$  is

described; and, in the case of the less angle,  $AE$ : and both in the same time, because  $AB = AF$ . The velocities, therefore, are as  $AD$  to  $AE$ : wherefore, since  $AD$  is less than  $AE$ , the velocity in the case of the greater angle is less than that of the less angle.

Hence, since the legs  $AC$  and  $CE$ , with the included angle, being given, the angle  $CEA$ , and thence also  $AE$ , is found; the velocity of the conspiring powers, and the angle of direction, in any particular case, being given, the velocity of the compound motion, and consequently the ratio of the velocities produced by the same powers under different angles of directions, may be determined.

For the particular laws of motion arising from the collision of bodies, both elastic and unelastic, and that where the directions are both perpendicular and oblique, see COLLISION and PERCUSSION.

For circular motion, and the laws of projectiles, see PROJECTILE.

For the motion of pendulums, and the laws of oscillation, see PENDULUM.

MOTION, *Altitude of.* See ALTITUDE.

MOTION, *Longitude of.* See LONGITUDE.

MOTION, *Perpetual*, in *Mechanics*, a motion which is supplied and renewed from itself without the intervention of any external cause; or it is an uninterrupted communication of the same degree of motion from one part of matter to another, in a circle or other curve returning into itself, so that the same momentum still returns undiminished upon the first mover.

This celebrated problem of a perpetual motion consists in the inventing of a machine, which has the principle of its motion within itself. M. de la Hire has demonstrated the impossibility of any such machine, and finds that it amounts to this, *viz.* to find a body which is both heavier and lighter at the same time; or to find a body which is heavier than itself.

To find a perpetual motion, or to construct an engine, &c. which shall have such a motion, is a famous problem that has employed the mathematicians of two thousand years; though none, perhaps, have prosecuted it with attention and earnestness equal to those of the present age.

Infinite are the schemes, designs, plans, engines, wheels, &c. to which this longed-for perpetual motion has given birth: it were as endless as impertinent to give a detail of them all.

In effect, there seems but little in nature to countenance all this assiduity and expectation: among all the laws of matter and motion, we know of none yet, which seem to furnish any principle or foundation for such an effect.

Action and re-action are allowed to be ever equal; and a body which gives any quantity of motion to another, always loses just so much of its own; but under the present state of things, the resistance of the air, the friction of the parts of machines, &c. do necessarily retard every motion.

To keep the motion constant, therefore, either, first, there must be a supply from some foreign cause; which in a perpetual motion is excluded.

Or, secondly, all resistance from the friction of the parts of matter must be removed; which necessarily implies a change in the nature of things.

For, by the second law of nature, the changes made in the motions of bodies, are always proportional to the impressed moving force, and are produced in the same direction with it; no motion then can be communicated to any engine, greater than that of the first force impressed.

But,



But, on our earth, all motion is performed in a resisting medium, and must, therefore, of necessity be retarded; consequently, a considerable quantity of its motion will be spent on the medium.

Nor is there any engine or machine in which all friction can be avoided; there being in nature no such thing as exact smoothness, or perfect congruity; the manner of the cohesion of the parts of bodies, the small proportion the solid matter bears to the vacuities between them, and the nature of those constituent particles not admitting it. This friction, therefore, will also in time sensibly diminish the impressed, or communicated force; so that a perpetual motion can never follow, unless the communicated force be so much greater than the generating force, as to recompence the diminution made therein by all these causes: but *nil dat quod non habet*, and the generating force cannot communicate a greater degree of motion than it hath itself.

Or, thirdly and lastly, there must be some method of gaining a force equivalent to what is lost, by the artful disposition and combination of mechanic powers; to which last point, then, all endeavours are to be directed: but how, or by what means such force should be gained, is still a mystery!

The multiplication of powers or forces, it is certain, avails nought: for what is gained in power is still lost in time, so that the quantity of motion still remains the same. This is an inviolable law of nature; by which nothing is left to art, but the choice of the several combinations that may produce the same effect.

Although it is allowed, that, by the resolution of force, there is a gain or increase of the absolute quantity of force, as the two forces in the sides of the parallelogram taken together exceed the force in the diagonal which is resolved into them, yet you cannot proceed resolving motion in *infinitum* by any machine whatsoever; but those you have resolved must be again compounded, in order to make a continual movement, and the gain obtained by the resolution will be lost again by the composition. In like manner, if you suppose two bodies to be perfectly elastic, and that the lesser body strikes the other at rest, there will be an increase of the absolute quantity of force, because the striking body will be reflected; but if you suppose them both to turn round any centre, after the stroke, so as to meet again, this increase of force will be lost, and their motion will be reduced to its first quantity. Such a gain, therefore, of force, as must be afterwards lost in the actions of the bodies, can never produce a perpetual movement. There are various ways, besides these, by which absolute force may be gained; but since there is always an equal gain in opposite directions, and no increase obtained in the same direction; in the circle of actions necessary to make a perpetual movement, this gain must be presently lost, and will not serve for the necessary expence of force employed in overcoming friction, and the resistance of the medium. We may observe, therefore, that though it could be shewn, that in an infinite number of bodies, or in an infinite machine, there could be a gain of force for ever, and a motion continued to infinity, it does not follow that a perpetual movement can be made. That which was proposed by M. Leibnitz, in August, 1690, in the Leipzig Acts, as a consequence of the common estimation of the forces of bodies in motion, is of this kind, and for this and other reasons ought to be rejected.

The possibility of a perpetual motion has been urged from the following specious argument. Let the height A B (*Plate XXXIV. Mechanics, fig. 11.*) be divided into four

equal parts A C, C D, D E, E B: suppose the body A to acquire, by the descent A C, a velocity, as 1; and this motion, by any contrivance, to be transmitted to an equal body B: then let the body A, by an equal descent C D, acquire another degree of motion, as 1, to be transmitted likewise to the same body B, which in this manner is supposed to acquire a motion, as 2, that is sufficient to carry it upwards from B to A; and because there yet remain the motions which A acquires by the descents D E and E B, that may be sufficient to keep an engine in motion, while B and A ascend and descend by turns, it is hence concluded, that a sufficient gain of force may be obtained in this manner, so as to produce a perpetual movement. But it should be considered, that two equal successive impulses, acting upon the same body, will not produce a motion in it double of that which would be generated by the first impulse; because the second impulse has necessarily a less effect upon the body, which is already in motion, than the first impulse which acted upon it while at rest. In like manner, if there is a third and fourth impulse, the third will have less effect than the second, and the fourth less than the third. Hence it appears, that a motion, as 2, in the preceding case, cannot be produced in B, by the two successive impulses transmitted from A, each of which is as 1. *Maclaurin's View, &c. book ii. c. 3. See ORFFYREUS's Wheel.*

MOTION, *Rotatory.* See ROTATORY Motion.

MOTION, *Animal,* is that by which the situation, figure, magnitude, &c. of the parts, members, &c. of animals are changed.

Under these motions come all the animal functions; as *respiration, circulation of the blood, excretion, walking, &c.* Animal motions are usually divided into two species; viz. *Spontaneous, and natural.*

*Spontaneous* or *muscular* motion is that performed by means of the muscles, at the command of the will; hence also called *voluntary motion*: or, according to the system of Dr. Hartley, *voluntary* motions are such as immediately succeed to *volition* (which see), without the intervention of sensible impressions. See MUSCULAR Motion.

*Natural, involuntary, or automatic* motion, is that effected without such command of the will; by the mere mechanism of the parts. Such is the motion of the heart and pulse; the peristaltic motion of the intestines, &c.

*Semivoluntary* are those which in part, but not uniformly, follow the will; such, *e.g.* are breathing, vomiting, and the like. These are excited sometimes by a stimulus independent on the will; and, at other times, they are partly restrained or accelerated by volition, a sense of decency, propriety, &c. with which they may happen to have been associated. There are other motions, *originally automatic*, which, after becoming perfectly voluntary, by association become gradually *voluntary*, and in the end completely *automatic* again. Thus, a person learning to play upon the harpsichord, exerts an express volition for every motion of the finger upon the keys of the instrument; by degrees the visible appearance of the notes will produce the motions without the intervention of volition; and at last the motions will, as it were, cling together, and produce each other in a manner perfectly automatic, without the intervention of volition, sensation, or idea, and even when the attention is wholly engaged upon a subject foreign to the performance.

MOTION, *Intestine,* denotes an agitation of the particles of which a body consists.

Some philosophers will have every body, and every particle of a body, in continual motion. As for fluids it is the definition



definition they give of them, that their parts are in continual motion.

And as to solids, they infer the like motion from the effluvia continually emitted through their pores.

Hence intestine motion is represented to be a motion of the internal and smaller parts of matter, continually excited by some internal, latent agent, which of itself is insensible, and only discovers itself by its effects; appointed by nature to be the great instrument of the changes in bodies.

MOTION, in *Astronomy*, is peculiarly applied to the orderly courses of the heavenly bodies.

The motion of the earth, from west to east, is now generally granted among astronomers: see it proved under the article EARTH.

MOTION, *Mean*. See MEAN.

The motions of the celestial luminaries are of two kinds: *diurnal*, or *common*; and *secondary*, or *proper*.

*Diurnal*, or *primary* motion, is that with which all the heavenly bodies, and the whole mundane sphere, appear to revolve every day round the earth, from east to west. This is also called the motion of the *primum mobile*, and the *common* motion; to distinguish it from that rotation which is peculiar to each planet, &c. It is about the various phenomena resulting from this motion, that astronomy is chiefly employed. See DIURNAL.

*Secondary*, or *proper* motion, is that with which a star, planet, or the like, advances a certain space every day from west towards east.

See the several motions of each luminary, with the irregularities, &c. to which they are subject, under the proper articles, EARTH, MOON, STAR, &c.

MOTION, *Angular*. See ANGULAR.

*Horary Motion of the earth*. See HORARY.

*Paracentric Motion of impetus*. See PARACENTRIC.

MOTION of *Trepidation*, &c. See TREPIDATION, and LIBRATION.

MOTION, in *Music*, denotes the manner of beating the measure, to hasten or slacken the time of the words, or notes. See TIME.

The motion, in songs composed in double time, differs from that in those in triple time. It is the motion that distinguishes courants and sarabands from gavots, boreas, chaconnes, &c.

MOTION, *Moto*, or *Movimento*, in the *Italian Music*, has many significations; sometimes it means only a motion or passage from one note to another, at whatsoever distance, as a second, third, or any other interval; and is the same whether the intermediate degrees (if there are any) be sounded, or only the extremes of them, as the first and last sound of any given interval. Sometimes it regards the quickness and slowness of such motions, as a brisk, slow, lively, or languid motion; and in this sense it is used with regard to minuets, gavots, sarabands, &c. See each article in its proper place.

But the most common, and indeed the most important acceptance of the word, is with respect to *harmony*; those above described only regarding *melody*.

With regard to harmony, it is the comparing the manner wherein an upper or treble part moves from one sound to another, with that wherein a lower or bass-part moves; this is to be done three ways. The first is when the upper and lower parts both move the same way, either upwards or downwards, and is called *moto retto*. The second is when in comparing the upper with the lower part, the one ascends while the other descends, or *è contra*, and hence called *moto contrario*. The last is when one of the parts holds out, or continues a sound, while the other rises or falls on any note whatsoever; and this is called *moto obliquo*.

MOTION, in the *Ancient Music*, was used to signify the transition of the voice, from an acute to a grave sound; or the contrary. This they expressed by *κατα τον κινισθαι*. See LOCUS.

Meibomius translates it, *moveri in loco*.

MOTION is also used, among *Mechanics*, for the inside of a watch, &c. more commonly called *movement*.

MOTIONS, in *Military Language*, denote the marches, countermarches, &c. which an army makes in changing its post.

The great skill of a general consists in discovering the enemy's motions, and concealing his own. Nothing is more dangerous than to make great motions before a powerful enemy, ready to come to blows. See MARCH.

MOTION, in the *Manege*. A horse is said to have a pretty motion, when he moves and bends his fore-legs with great ease and freedom upon the manege. But if a horse trots right out and keeps his body straight, and his head high, and bends his fore-legs handsomely, then to say he has a pretty motion with him, implies the liberty of action of the forehead.

MOTION, or *Emotion*, in *Rhetoric*. See PASSION.

MOTIONS, *Rhythmical*, a phrase used by Vossius, and other writers on the ancient rhythm, to express those motions which were made use of in the Greek and Roman entertainments to convey the ideas of the poet, or to assist music in rousing the passions. These not only had great force when joined with sounds, but even without any voice or sound they could move the passions in the spectator more than many of the best orators of the times could do with their most laboured discourses.

Rolcius, the stage-player so famous in their pantomimes, which were all dumb-show, was so excellent at expression by these rhythmical motions, or gestures, that Cicero and he being contemporaries, there were many disputes between them, which could vary the same sentence most; the one using all the power of words, the other being confined to gestures alone.

MOTION in *court*. In the courts of chancery, king's bench, &c. motions are made by barristers and counsellors at law, for what concerns their clients' causes; and where any motion is made in chancery, that is not of course, generally an affidavit of the facts alleged must be read in court; and if motions are founded on the general rules or usage of the court, and are not of course, but granted or denied as the court thinks fit, on hearing counsel on both sides, notice is to be given in writing to the solicitor of the other party, or his clerk in court, expressing every thing to be moved for, which must be served two days at least before the day on which the motion is to be made; whereof affidavit must also be made.

MOTION of *Plants*, in *Gardening*, the course or direction of growth which is taken in different parts of them.

With respect to the roots and stems, the direction is totally opposite, the former either running directly downward into the ground, or horizontally under the surface; while the latter direct their motion towards the air and light of the sun, mostly in an upright manner, but sometimes horizontally along the surface of the ground. The causes which operate in promoting these are the quest of nourishment in the root, and the influence of the air, and light of the sun, on the stem; for when any number of plants growing in pots is placed in a room, which only admits a small portion of light at one place, the stems all incline towards that side; in close dark thickets, the young trees always lean to the part where the most light penetrates; and the new shoots of espalier or wall-trees detach themselves from those supports, in quest of free air and light.

And



And it would seem that the force of motion is greater in the roots than in the stems; the roots, without ever once going out of their way, pierce the hardest soils, penetrate into walls, which they overturn, and even into rocks, which they split; whereas the stems and branches surmount obstacles by leaving their natural direction, and over-topping them.

But though the natural tendency of most stems or trunks is to ascend, yet some by their weakness, or natural growth, descend: and occasionally by means of roots breaking out all along the stems and branches, as in the strawberry, pennyroyal, and many other creeping plants, the stems are, by the roots striking into the earth, tethered as it were to the ground, and only their extremities have the power of directing their course upwards.

The leaves and flowers of plants also direct their course towards the air, and light of the sun; the leaves always turning their upper surface outward to the air and light; which is very obvious in wall-trees, and when a branch is overturned, so that the leaves are inverted, they naturally direct their surfaces again gradually upwards to the light and air, though this often takes them several days' growth. Some flowers are also supposed to have a particular daily motion, so as to present their surfaces directly to the sun, and follow the diurnal course of it, as the sun-flower, and most of the compound flowers; in all of which the disk or surface is believed to look towards the east in the morning, the south at noon, and the west in the evening.

And during the heat of the sun, the pinnated or winged leaves, particularly of the papilionaceous tribe of plants, rise vertically upwards, the opposite lobes or folioles, which compose the leaves, rise so as to be generally applied close together by their upper surfaces; but in that state of the atmosphere which generally precedes a storm, or during a close, moist, cloudy air, the lobes of the same sort of leaves extend themselves commonly along the footstalk; and after sun-set incline still lower, and hang directly down under the footstalk, being applied close together like the leaves of a book, by their lower surfaces; a state which by Linnæus is called the sleep of plants.

Farther, the simple leaves of many plants, when their surface is exposed to an ardent sun, also become concave above, but gradually recover as the heat declines. But, of all the motions of the leaves of plants, none is so sudden and rapid as those of the sensitive and humble kinds.

There is another kind of motion in plants; that is, elasticity; which is resident particularly in some sorts of feed-vessels, such as the yellow balsamine, and spurting cucumber, &c. in which their fruits, when arrived at maturity, burst open like a spring, and dart out their seeds with an elastic force to a considerable distance in many cases.

MOTIR, in *Geography*, a small island in the East Indian sea, of a triangular form, about 24 miles S. from Ternate. N. lat.  $0^{\circ} 26'$ . E. long.  $127^{\circ} 19'$ .

MOTIVE is sometimes applied to that faculty of the human mind, by which we pursue good and avoid evil. Thus Hobbes distinguishes the faculties of the mind into two sorts, the cognitive, and motive.

MOTIVE, in *Metaphysics* and *Morals*, denotes whatever moves or influences the mind in its choice; which some writers have extended so as to include the bias of the mind as well as the end in view, and to comprehend both reason and inclination, and in a word, every circumstance immediately previous to the volition, and which in the least degree contributes to generate the choice. Others, however, conceive that it is absurd to say, that our inclinations act upon

us, or compel us, and that our desires and fears put us into motion, or produce our volitions; that is, are agents. But though this notion be absurd, it is perfectly conceivable that they may be the occasions of our putting ourselves into motion. Accordingly it is alleged, that there is an essential and total difference between the ideas of an efficient cause and an account or occasion. What sense would there be in saying that the situation of a body, which may properly be the occasion or account of its being struck by another body, is the efficient of its motion or its impeller? It is upon the influence of motives that the modern advocates for the doctrine of necessity lay the main stress of their cause. Every deliberate action, they say, must have a motive. When there is no motive on the other side, this motive must determine the agent: when there are contrary motives, the strongest must prevail. We reason from men's motives to their actions, as we do from other causes to their effects. If man be a free agent, and be not governed by motives, all his actions must be mere caprice; rewards and punishments can have no effect; and such a being must be absolutely ungovernable. On the other hand, the advocates for liberty, considered as "a power to act," or "a power of self-motion, or self-determination," whilst they allow, that all rational beings are influenced, and ought to be influenced by motives, maintain, that the influence of motives is of a very different nature from that of efficient causes. They are neither causes nor agents. They suppose an efficient cause, and can do nothing without it. We cannot, without absurdity, as they argue, suppose a motive either to act or to be acted upon; it is equally incapable of action or passion; because it is not a thing that exists, but a thing that is conceived; it is what the schoolmen call an "ens rationis." Motives, therefore, may influence to action, but they do not act. They may be compared to advice, or exhortation, which leaves a man still at liberty. For in vain is advice given, when there is not a power either to do, or to forbear, what it recommends. In like manner, motives suppose liberty in the agent, otherwise they have no influence at all. With respect to matter, it is a law of nature, that every motion, and change of motion, is proportioned to the force impressed, and in the direction of that force. The scheme of necessity supposes a similar law to obtain in all the actions of intelligent beings; and this implies, that every action, or change of action, in an intelligent being, is proportional to the force of motives impressed, and in the direction of that force. It is farther alleged, that as the law of nature respecting matter is founded upon this principle, viz. that matter is an inert, inactive substance, which does not act, but is acted upon, the law of necessity must be grounded upon the supposition, that an intelligent being is an inert, inactive substance, which does not act, but is acted upon. In relation to this subject, it has been further alleged, that rational beings, in proportion as they are wise and good, will act according to the best motives; and that every rational being, who does otherwise, abuses his liberty. The most perfect being always infallibly acts according to the best motives; but to say that such a being does not act freely, because he always does what is best, is in effect to say, that the proper use of liberty destroys liberty, and that liberty consists only in the abuse of it. Whilst it is granted, that motives have influence, similar to that of advice or persuasion, this influence is perfectly consistent with liberty, and indeed supposes liberty. In order to determine the question, whether or not every deliberate action must have a motive, it should be considered in what sense the word *deliberate* is used. If by a deliberate action, we mean, agreeably to the original meaning of the term, an action in which motives are weighed, there must be motives, and even contrary motives, otherwise they could



could not be weighed. But if a deliberate action means only, as it commonly does, an action done by a cool and calm determination of the mind, with forethought and will, many such actions are done without a motive. On this point an appeal may be made to every man's own consciousness. Cases do occur, and they are not unfrequent, in which a person who intends the end finds not the least difficulty in adopting one of various means for its attainment, though at the time he be firmly persuaded, that it has no title to be preferred to any of the others. To say that such a case cannot happen, is to contradict the experience of mankind; and to say that if it should happen, the person could not execute his purpose, is still more ridiculous, though the authority of some of the schoolmen has determined, that the ass between two equal bundles of hay, would stand still till it died of hunger.

If a man could not act without a motive, he would have no power at all; for motives are not in our own power; and he that has not power over a necessary mean, has no power over the end. Although actions that are performed without any motive, can have neither merit nor demerit, and are, therefore, insignificant in a moral estimation, they are important, it is said, in the question concerning moral liberty. For, if there ever was any action of this kind, motives are not the sole causes of human action; and if we have the power of acting without a motive, that power, joined to a weaker motive, may counterbalance a stronger.

It has been further urged, that it can never be proved, that when there is a motive on one side only, the action must be determined by it. If there be such things as wilfulness, caprice, or obstinacy, among mankind, a single motive, or indeed many motives, may be resisted. When it is said, that of contrary motives, the strongest always prevails, it is necessary, before the assertion can be either affirmed or denied, to ascertain what is meant by the strongest motive; but this cannot be easily done. Unless some sort of measure of the strength of motives, distinct from their prevalence, can be found, it cannot be determined, whether the strongest motive prevails or not. Every thing that can be called a motive, is addressed either to the animal or to the rational part of our nature; and, therefore, motives may be denominated "animal" when they are such as are common to us with the brutes, and "rational," when they are peculiar to rational beings. When a man is acted upon by contrary motives of the former kind, he finds it easy to yield to the strongest; but if it be inquired, whether the strongest of this kind of motives always prevails, this is probably the case with regard to brute animals. They have no self-command, and are, therefore, not accountable. But with men, possessing rational powers, and any degree of self-command, the strongest animal motive does not always prevail. It is, however, to rational motives, that the term "motive" is more commonly and more properly applied. They do not give a blind impulse to the will as animal motives do, but they influence the judgment; they convince, but do not impel, unless they excite some passion of hope, or fear, or desire. But there may be conviction without passion; and the conviction of what we ought to do, in order to some end which we have judged fit to be pursued, is what is called a "rational motive." If there be any competition between rational motives, it is evident, that the strongest, in the eye of reason, is that which it is most our duty and our real happiness to pursue. This may be called the "rational test" of the strength of motives. The grand and the important competition of contrary motives is between the animal on the one hand, and the rational on the other. If it be asked, which of these is the strongest motive? The

answer is, that the first is commonly strongest, when they are tried by the animal test. If it were not so, human life would not be a state of trial. But contrary motives being tried by the rational test, it is evident, that the rational motive is always the strongest. Hence it is inferred, that the strongest motive, according to either of the tests above-mentioned, does not always prevail. In every wise and virtuous action, the motive that prevails is the strongest according to the rational test, but commonly the weakest according to the animal. In every foolish, and every vicious action the motive that prevails is commonly the strongest according to the animal test, but always the weakest according to the rational. The writer, whose sentiments we are now stating, farther observes, that we reason from men's motives to their actions, and in many cases with great probability, but never with absolute certainty; but yet we should be chargeable with weak reasoning, if we inferred from this circumstance, that men are necessarily determined by motives; nor is it better reasoning to conclude, that, if men are not necessarily determined by motives, all their actions must be capricious. It is equally unreasoning to conclude, that if men are not necessarily determined by motives, rewards and punishments would have no effect. Upon the supposition of necessity, it is alleged, there can be neither reward nor punishment, in the proper sense, as those words imply good or ill desert. Reward and punishment are only tools employed to produce a mechanical effect. When the effect is not produced, the tool must be unfit or wrongly applied. Whereas, upon the supposition of liberty, rewards and punishments will have a proper effect upon the wise and good, but not so upon the foolish and vicious, when opposed by their animal passions or bad habits; and this is agreeable to fact. Upon this supposition, the transgression of the law implies no defect in the law, nor fault in the law-giver; the fault is solely in the transgressor; and it is upon this supposition only, that there can be either reward or punishment, in the proper sense of the words, because it is only on this supposition that there can be good or ill desert. Reid's *Essays on the Active Powers of Man*, *Ess. iv. chap. 4 and 5*.

Supposing a power of self-determination, says another excellent writer in evincing the consistency of liberty with acting from a regard to motives, it is by no means necessary that it should be exerted without a regard to any end or rule. On the contrary, it can never be exerted without some view or design. The power of determining ourselves, by its very nature, needs an *end* and *rule* to guide it; and no probability, or certainty, of its being excited agreeably to a rule, can have the least tendency to infringe or diminish it. All that should be avoided here is, the intolerable absurdity of making our reasons and ends in acting the physical causes or *efficient*s of action. This is the same with ascribing the action of walking, not to the feet (or the power which moves the feet), but to the eye, which only *sees the way*. The perception of a reason for acting, or the judgment of the understanding, is no more than seeing the way. It is the eye of the mind, which informs and directs; and whatever *certainty* there may be that a particular determination will follow, such determination will be the *self-determination* of the mind; and not any change of its state stamped upon it, over which it has no power, and in receiving which, instead of being an *agent*, it is merely a *passive subject* of agency. This author insists much on the importance of the distinction maintained by Dr. Clarke, between the *operation of physical causes*, and the *influence of moral reasons*. The views or ideas of beings may be the *account* or *occasions* of their acting; but it is a contradiction to make them the *mechanical efficient*s of their actions. *Physical and moral*



causes differ in the following particulars; the one are *beings*, the others are only the *views* of beings;—the one always *do*; and the other *may* produce a certainty of event; but the certainties in these two cases essentially differ; and to ascribe a necessary and physical efficiency to motives, is (as Dr. Clarke has observed) the same with saying, that “an abstract notion can strike a ball;” the certainty of event arising from the operation of *physical* causes is always equal and invariable, but the certainty of event arising from *moral* causes, that is, from the views and perceptions of beings, admits of an infinite variety of degrees; and sometimes passes into *probability* and *contingency*. Supposing contrary reasons equally balanced in the mind, it may be *uncertain* how a being will act. *E. G.* If a temptation to an act of wickedness comes in the way of a man whose love of virtue is nearly equal to the strength of his passions, it may be doubtful which way he will determine. If his love of virtue exceeds the influence of passion, there will be a *probability* of his acting virtuously, proportioned to the degree in which the love of virtue prevails within him; and it may be so prevalent as to make it *certain*, that he will always follow his perceptions of virtue. Moreover, in the operation of physical causes, it is always implied, that there is not in any sense a power to produce, or a possibility of producing any other effect than that which is produced; but the contrary is true of effects dependent on the wills, and occasioned by the views of free agents. A benevolent man will *certainly* relieve misery when it falls in his way; but he has the *power* of not relieving it. On the contrary, a stone thrown from the hand *must* move. The benevolent man *acts*; the stone only *suffers*. Who can deny, as the same author proceeds, even with respect to the supreme deity, that however certain it may be, that he will not make his creation miserable, he has the power to do it? It is, indeed, on this power, that all our notions of moral excellence in the actions of beings depend. Were the beneficence of a being no more his *action*, or *self-determination*, than the falling of rain is the action, or self-determination of rain, it would not be the object of moral approbation; or the ground of esteem and gratitude. It is added, that the *causality* implied in the views and dispositions of beings is entirely consistent with moral obligation and responsibility; but all effects brought about by mechanical laws are inconsistent with them. Upon the whole, as our author argues, the question concerning liberty is not, “whether the views or ideas of beings *influence* their actions; but what the *nature* of that *influence* is.” This, as the advocates for liberty contend, is not any kind of *mechanical* or *physical* efficiency; for if it were, man could not be said to *act*. It would be folly to applaud or reproach ourselves for our conduct; and there would be an end of all moral obligation and accountableness. Price’s Review of Morals, p. 410 to p. 415, ed. 2d; and A Free Discussion of the Doctrines of Materialism and Philosophical Necessity, in a Correspondence between Dr. Price and Dr. Priestley, p. 134, &c. See LIBERTY.

The advocates for necessity, on the other hand, maintain, that, if *self-motion* or *self-determination*, properly so called, be essential to liberty, man does not possess it; and if this, and nothing else, be called *agency*, they deny that man is an agent: because every human volition is invariably directed by the circumstances in which a man is placed, and what they call “motives.” To this purpose Dr. Priestley says, it appears to me that we have no more reason, *from fact and observation*, to conclude that a man can *move himself*, that is, that he can *will without motives*, than that a stone can move itself. And, if the will is as invariably influenced by motives as the stone is influenced by gravity, it may just

as well be said that the stone moves itself, though always according to the laws of gravity, as that the will, or the mind moves itself, though always according to the motives: and whether these motives be called the *moral* or the *physical* causes of our volitions, is of no sort of signification, because they are the *only* and the *necessary* causes, just as much as gravity is the only and necessary cause of the motion of the stone. Let the mind act contrary to motives, or the stone move contrary to the laws of gravity, and “I shall then,” says Dr. Priestley, “but not before, believe, that they are *not* the only and necessary causes.” The difference asserted by the Libertarians to subsist between *moral* and *physical* causes and effects, appears to me, says the same author, to be that which subsists between *voluntary* and *involuntary* causes and effects: and this indeed is a most important difference. Where involuntary motives are concerned, as is the case of a man dragged by force, it is absurd to use any reasoning or expostulation, or to apply rewards or punishments, because they can have *no effect*: but where voluntary motives are concerned, as in the case of a man who is at liberty to go where he pleases, &c. reasoning and expostulation, rewards and punishments, have the greatest *propriety*, because they have the greatest effect; for they are applied to, and influence or move the will, as much as external force moves the body. On this circumstance, *viz.* the influence of motives on the will, it is said, that the whole of *moral discipline* depends; so that if the will of man were so formed, as that motives should have no influence upon it, he could not be the subject of moral government; because the hope of reward and the fear of punishment operate in no other manner than as *motives applied to the will*. The ideas belonging to the terms *accountableness*, *praise*, and *blame*, *merit* and *demerit*, all relate to the business of moral discipline, and therefore necessarily imply that men are influenced by motives, and act from *fixed principles* and *character*, though on account of our not comprehending the doctrine of *causes*, and stopping where we ought not, we are generally under some mistake or misconception with respect to them. Dr. Priestley thinks, that in treating this subject philosophically, these words should be disused. Correspondence, &c. *ubi supra*. Priestley’s Differ. vol. ii. Belsham’s Elem. of the Philosophy of the Mind. See farther on this subject the article NECESSITY.

MOTIVO, in *Italian Music*, implies the theme, subject, or two or three first bars of a composition. This technical term is chiefly used by composers in speaking of particular movements. It expresses the primitive and original idea upon which a composer forms an air or movement, and arranges his design. It is the *motivo*, or first conception, that inclines him to seize the pen in order to fix or embody one text or thought upon paper in preference to another; it resembles the *prima intensione* of painters. In this sense the principal *motivo* or subject ought to be continually in the composer’s mind, nor should he suffer it to be forgotten by the audience. A composer is said “to be beating about the bush,” when he loses sight of the *motivo*, and is stringing passages together without sense or connection with each other.

Besides the *motivo*, which is only the leading idea of the piece, there are particular traits which naturally arise out of the subject and modulation, which, by being interwoven in the texture of the harmony, discover the author’s ability and resources; or, if not perceptible, his want of science and invention.

MOTO, Ital. motion: as *Moto contrario*, contrary motion; *con moto*, with motion, not dragged or too slow.

MOTO,



MOTO, in *Geography*, a town of Hindoostan, in Guzerat; 5 miles E. of Pattun.

MOTODZIECNO, a town of Lithuania, in the palatinate of Wilna; 64 miles E.S.E. of Wilna.

MOTOL, a town of Lithuania, in the palatinate of Brzesc; 60 miles E. of Brzesc.

MOTOLA, a town of Africa, in the kingdom of Congo.—Also, a town of Naples, in the province of Otranto, the see of a bishop, suffragan of Tarento; 134 miles E. of Naples. N. lat.  $40^{\circ} 52'$ . E. long.  $17^{\circ} 2'$ .

MOTOORAH, a town of Bengal; 50 miles S.S.W. of Calcutta. N. lat.  $22^{\circ} 2'$ . E. long.  $87^{\circ} 48'$ .

MOTOOTABOO, one of the smaller Friendly islands; 3 miles N.W. of Tongataboo.

MOTORES OCULORUM, in *Anatomy*, the nerves of the third pair, which supply the muscles of the eye. See NERVE.

MOTORES Oculorum Externi, the nerves of the sixth pair, distributed to the external straight muscles of the eyes. See NERVE.

MOTOS, *μωτος*, a piece of lint, or linen cloth, opened like wool, to be put into ulcers, to stop the flux of blood, &c.

MOTOS, in the *Materia Medica of the Ancients*, was a name given by Galen and others to a kind of cassia bark, the best and finest that has been used at any time. The ancients were very fond of this drug, and ranged it, according to its different goodness, into several sorts.

MOTOUA, in *Geography*. See MUTOVA.

MOTOVSKAIA, a town of Russia, in the government of Archangel; 12 miles N.N.E. of Kola.

MOTRAPOUR, a town of Bengal; 10 miles N. of Mahmudponr.

MOTRICO, a sea-port town of Spain, in Guipuscoa, in the bay of Biscay; 18 miles W. of St. Sebastian.

MOTRIL, a sea-port town of Spain, in the province of Granada. From this town, along the coast as far almost as to Gibraltar, there are several sugar-mills, called "Ingenios," and at Motril are four of them, which have been used from time immemorial for the manufacture of sugar; but the culture of sugar-canes has of late, from political motives, been superseded by that of the vine; 4 miles E. of Malaga. N. lat.  $36^{\circ} 45'$ . W. long.  $3^{\circ} 42'$ .—Also, a town of Walachia; 10 miles N.N.W. of Krajova.

MOTRIX, something that has the power or faculty of moving.

MOTRIX, *Vis*. See *Vis Motrix*, and MOTION.

MOTTA RAPHAELLO, in *Biography*. See RAPHAEL-LINO.

MOTTA, in *Geography*, a town of Italy, in the Trevisan; 18 miles E.N.E. of Trevigia.—Also, a town of Italy, in the department of the Upper Po; 21 miles E. of Cremona.

MOTTA, *La*, a town of Sicily, in the valley of Noto; 11 miles W. of Calabria.

MOTTA di Brazzano, a town of Naples, in Calabria Ultra; 17 miles S. of Gierace.

MOTTA di Reina, a town of Naples, in Capitanata; 6 miles S. of Serviero.

MOTTA St. Gio, a town of Naples, in Calabria Ultra; 6 miles S.S.E. of Reggio.

MOTTA Sideroni, a town of Naples, in Calabria Ultra; 4 miles N.E. of Gierace.

MOTTABHEN, a town of Arabia, in Yemen; 10 miles N.E. of Beit el Fakih.

MOTTAPAR, a town of Hindoostan, in Travancore; 21 miles N.E. of Porchah.

MOTTARELLE, a town of Italy, in the Paduan; 9 miles S.S.W. of Padua.

MOTTE, ANTHONY HOUDART DE LA, in *Biography*, a considerable French writer, was born at Paris in 1672. He was educated at one of the seminaries of the Jesuits, and was destined for the profession of the law. This was not suited to his taste, so that he quitted his legal studies, and devoted himself to polite literature. At the age of twenty-one he wrote a comedy, which was represented, but which proved unsuccessful. Mortified at the disappointment, he wished to take the habit of the order of La Trappe, and offered himself at the monastery, but after a stay of a few weeks he was dismissed, returned to Paris, and composed an opera, entitled "L'Europe Galante," that obtained for him great applause. This was the commencement of his fame; he afterwards published several other pieces, which proved that he had great talents for lyric poetry. In 1707, he published a volume of "Odes," that were pretty much read, but did not add to his reputation. In 1710 he was admitted a member of the French academy, and his discourse on his reception was reckoned a model of the kind. He next had a desire of being distinguished in the composition of tragedies, and wrote several, of which the most successful was "Ines de Castro;" it proved, we are told, one of the most interesting pieces on the French stage, was acted a vast number of times on its first appearance, and is still popular. From tragedy he turned to comedy, and composed several pieces of that kind which were well received, particularly one entitled "Le Magnifique," which has retained a place among the most popular performances. In 1719 he published a volume of "Fables," which, though greatly criticised, were much read, and several of their lines became proverbial. He was author likewise of pastoral eclogues, cantatas, psalms, and hymns; but he has likewise attained to a high degree of excellence as a prose writer. His academical discourses have been much applauded, particularly an eulogy on Lewis XIV., which, among the number composed for the purpose, is the only one not entirely forgotten. He assumed also the character of a theologian, and drew up "A Plan of Evidences of Religion," which is thought to be a very valuable production. He maintained, through life, a perfect calmness in all the events of the world: although for many years he was reduced nearly to a state of blindness he bore the affliction with much patience and resignation, as he did the symptoms of a decline, which put an end to his life in 1731, at the age of fifty-nine. His works were published collectively at Paris in 1754, in eleven volumes, 8vo. An instance is given of the great mildness of his disposition: being in a crowd he trod on the foot of a young man, who instantly struck him a blow on the face: "Sir," said La Motte, "you will be very sorry for what you have done when I tell you I am blind." Moreri.

MOTTE, in *Geography*, a small island in lake Champlain, about eight miles in length, and two in breadth, distant two miles from Hero island. It constituted a township of its own name in Franklin county, Vermont, named in 1802 *Vineyard*: which see.

MOTTE, *La*, a town of France, in the department of the Vosges, placed on an eminence, not far from the Mouzon; 6 miles N.E. of Bourmont.

MOTTE-Achard, *La*, a town of France, in the department of the Vendée, and chief place of a canton, in the district of Les Sables d'Olonne; 9 miles N.E. of it. The place contains 250, and the canton 7533 inhabitants, on a territory of  $317\frac{1}{2}$  kilometres, in 12 communes.



**MOTTE-Chalengon, La**, a town of France, in the department of the Drôme, and chief place of a canton, in the district of Die; 16 miles S. of Die. The place contains 1161, and the canton 7546 inhabitants, on a territory of 362½ kilometres, in 17 communes.

**MOTTE-du-Caire, La**, a town of France, in the department of the Lower Alps, and chief place of a canton, in the district of Sisteron; 9 miles N. of it. The place contains 581, and the canton 4435 inhabitants, on a territory of 197½ kilometres, in 12 communes.

**MOTTE-Heraya, La**, a town of France, in the department of the Two Seves, and chief town of a canton, in the district of Melle. The place contains 2515, and the canton 8536 inhabitants, on a territory of 165 kilometres, in 8 communes.

**MOTTE St. Jean, La**, a town of France, in the department of the Saone and Loire; 6 miles W.N.W. of Paray-le-Monial.

**MOTTENE**, a town of Arabia, in Yemen; 8 miles S.W. of Sana.

**MOTTENHAGEN**, a town of Prussia, in the province of Natangen; 15 miles E.S.E. of Königsberg.

**MOTTEVILLE**, FRANCES BERTAUD DE, in *Biography*, daughter of a gentleman in ordinary of the king's bed-chamber, was born in Normandy about the year 1615. She was brought up at the court of queen Anne of Austria, with whom she ingratiated herself by her talents and agreeable manners. By the influence of cardinal Richelieu she was banished the court, and retired to Normandy, where she married Nicholas Langlois, lord of Motteville, first president of the chamber of accounts at Rouen. He was an old man, and left her a widow in about two years. After the death of Richelieu, queen Anne, then regent of France, recalled her to court, and kept her about her own person. The attachment which she had to the queen induced her to adopt the design of writing memoirs of her life, and with that view she began to note down every thing worthy of remembrance. The result was a work entitled "*Memoires pour servir à l'Histoire d'Anne d'Autriche*:" it was printed in 1723, in five volumes 12mo., and again in 1750, in six volumes 12mo. These memoirs display an intimate acquaintance with the court during the minority of Lewis XIV., and are regarded as true. She died at Paris in the year 1689. Moreri.

**MOTTEUX**, PETER ANTHONY, was a native of France, being born in 1660 at Rohan, in Normandy, where also he received his education. On the revocation of the edict of Nantes, he came over to England. He lived at first with his godfather and relation, Paul Dominique, esq.; but afterwards became a considerable trader himself, kept a large East India warehouse in Leadenhall-street, and had a very genteel place in the general post-office, relating to the foreign letters, being master of several languages. During his residence in this kingdom, he acquired so perfect a mastery of the English language, that he not only was qualified to give a very good translation of Don Quixotte, but also wrote several songs, prologues, epilogues, &c.; and, what was still more extraordinary, became a very eminent dramatic writer in a language to which he was not native. He produced about 18 dramas. This gentleman, who seems to have led a very comfortable life, his circumstances having been perfectly easy, was yet unfortunate in his death; for he was found dead in a disorderly house, in the parish of St. Clement Danes, not without suspicion of having been murdered. This accident happened to him on the 19th of Fe-

bruary 1717-18, which, being his birth-day, exactly completed his 58th year. Biog. Dram.

**MOTTLEY, JOHN**, was the son of colonel Mottley, who was a great favourite with king James II., and followed the fortunes of that prince into France. James, not being able himself to provide for him so well as he desired, procured for him, by his interest, the command of a regiment in the service of Louis XIV., at the head of which he lost his life, in the battle of Turin, in the year 1706. Mr. Mottley received the first rudiments of his education at St. Martin's Library school, founded by archbishop Tennyson; but was soon called forth into business, being placed in the excise-office, at 16 years of age, under the comptroller, lord viscount Howe, whose brother and sister were both related by marriage to his mother. This place he kept till the year 1720, when, in consequence of an unhappy contract that he had made, probably in pursuit of some of the bubbles of that infatuated year, he was obliged to resign it. Soon after the accession of king George I., Mr. Mottley had been promised by the lord Halifax, at that time first lord of the treasury, the place of one of the commissioners of the wine license office; but when the day came that his name should have been inserted in the patent, a more powerful interest, to his great surprise, had stepped in between him and the preferment, of which he had so positive a promise. Finding his prospects overclouded, he applied to his pen, and wrote his first drama, which was successful. From that time he depended chiefly on his literary talents, and wrote five dramatic pieces at least, besides having a hand in some others. He died in 1750. Biog. Dram.

**MOTTLING, or METLING**, in *Geography*, a town of the duchy of Carniola; 10 miles S.S.W. of Landstrass. N. lat. 45° 48'. E. long. 15° 15'.

**MOTTO**, an Italian term, literally signifying *word*, or *saying*; used in arms, devices, &c.

**MOTTO of an Armoury**, is a short sentence or phrase carried in a scroll generally over, sometimes under the arms; sometimes alluding to the name of the bearer, sometimes to the bearing, and sometimes to some remarkable achievement of the bearer.

The motto, or word, says Guillim, is an external ornament annexed to coat-armour; being the invention or conceit of the bearer, succinctly and significantly expressed, usually in three or four words, which are set in some scroll or compartment, placed at the foot of the escutcheon.

As the motto holds the lowest place in arms, so it is the last in blazoning. In strictness, it should express something intended in the achievement; but custom has now received whatsoever be the fancy of the deviser.

The use of mottos is very ancient; history, both sacred and profane, furnishing instances of them. Our ancestors made choice of mottos to express their predominant passions; as of piety, love, war, &c. or some extraordinary adventure that had befallen them; most of which, from some such original, have become hereditary in divers families.

The motto of the royal family of England is *Dieu Et mon droit*; of the royal family of Bourbon, *Espérance*; of the order of the Garter, *Honi soit qui mal y pense*, &c.

The motto of a device is also called the *soul of the device*.

**MOTU**.—*Ex mero Motu*. See *Ex*.

**MOTUARA**, in *Geography*, an island in the Pacific ocean, between the islands of New Zealand, in Queen Charlotte's sound, in which was a fortified village. S. lat. 41° 4'. W. long. 184° 50'.

**MOTUGOGOGO**, a cape of New Zealand, called by Cook Cape Bret (which see) lying in S. lat. 35° 10' 30". W. long.



W. long.  $185^{\circ} 25'$ . On the west side of it is a large and pretty deep bay, lying in S.W. by W., in which there appeared to be several small islands. The point that forms the N.W. entrance lies W.  $\frac{1}{2}$  N., at the distance of three or four leagues from Cape Bret, and was called by Cook *Point Pococke*.

MOTYSIN, a town of Russian Poland, in the palatinate of Kiev; 20 miles W.N.W. of Kiev.

MOUAH, a town of Hindoostan, in Guzerat, on the gulf of Cambay; 54 miles S.S.W. of Gogo.

MOUAMILLADOORO, a town of Hindoostan, in the Carnatic; 30 miles N. of Nestore.

MOUCHA, LA, a bay on the coast of Chili, on the west coast of South America.

MOUCHAMP, a town of France, in the department of the Vendée; 20 miles N.N.W. of Fontenoy le Comte.

MOUCHEROLLE, in *Ornithology*, the name of a small bird of the size of the sparrow, and of the same colour, but longer bodied; its wings are of a duskier colour than the rest of its body, and its head is variegated with very small blackish spots; its throat and belly are white, but the throat and the sides of the breast and belly have a faint reddishness; the beak is black, straight, and ridged, so as to appear triangular; it feeds on flies and other insects, and is common in gardens and orchards in many parts of England, though it has no English name. It is confounded by the common people with the common white-throat, but differs from it in that its tail is all of one colour, whereas the white-throat's is variegated. It somewhat resembles also the beccifago, or petty-chaps, but differs from it in having no greenish colour, and in its bill being ridged and triangular. See MUSCICAPA and TODUS.

MOUCHERON, FREDERICK, called the *Old*, in *Bio-graphy*, was a landscape-painter, born at Embden in 1653, and the disciple of John Asselyn; but at the age of 22, he went to Paris to practise the lessons he had learnt in his profession, and was so fortunate as to obtain considerable applause, at an early period, by a freedom and boldness of hand, and a certain air of nature which his works possess, without, however, being highly meritorious, or ever being carried to any great degree of perfection. His choice of subjects was generally from the common scenes of nature: these he wrought with a full pencil, and a touch light and free. His colouring is generally of a negative cast, with the fore-grounds wrought up clear and rich; but his middle distances are often pale and indistinct, and have a little too much the air of the painter's not being decidedly well informed of his own intentions. From Paris he went to settle at Amsterdam, and during his continuance in that city, the figures in his landscapes were frequently painted by Adrian Vander Velde; as during his residence in France, they were by Theodore Heimbreeker. He died at the age of 53. His son,

MOUCHERON, ISAAC, was born at Amsterdam in 1670, and having had the advantage of his father's instructions in the art of painting, till he arrived at the 24th year of his age, he then travelled to Rome, where he made designs of the interesting, and often beautiful, scenery around that city. Of these he carried back with him to his native place a very considerable number, and was there employed in painting pictures from them, in halls, saloons, and the apartments of noble edifices; being assisted with figures for his scenery by Verkolke and De Wit. He lived till the year 1744, having enjoyed great praise and benefit from the exercise of his talents; and his works are still very much esteemed.

MOUCHOU, in *Geography*, a river of China, which runs into the Eastern sea, N. lat.  $36^{\circ} 56'$ . E. long.  $121^{\circ} 54'$ .

MOUCIUR, a town of Asiatic Turkey, in Caramania; 30 miles N.N.E. of Akserai.

MOUD, a town of Asiatic Turkey, in Caramania; 78 miles S.E. of Cogni.

MOUDON, MILDEN, *Mildunum*, a town of the Helvetian republic, which gives name to a bailiwick, in the canton of Berne. It is a handsome town, and was formerly the capital of all that part of the Pays de Vaud, which belonged to the duke of Savoy. It was the ordinary residence of his chief bailiff, and the place where the states were accustomed to meet. The town is inconveniently situated on the river Broye, part of it being level, and part of it lying on the declivity of a hill, from which a rivulet passes, and rushes through the lower town, and runs with rapidity into the Broye. In the upper town was formerly a church, dedicated to the Virgin Mary, of which nothing now remains but a tower or kind of steeple. In the lower part of the town is one church. Antonine mentions this place in his Itinerary, and it is thought to be one of those which the Swifs burned in the time of Julius Cæsar. Some ancient medals and other curiosities have been found in this place. The district or bailliage, in which it lies, is about ten miles long and eight broad, partly mountainous and woody, and partly fertile. The town, situated at the entrance of a narrow valley, is distant 11 miles N.E. from Lausanne. N. lat.  $46^{\circ} 42'$ . E. long.  $6^{\circ} 56'$ .

MOUDYEL, a town of Hindoostan, in the circar of Cuddapa; 40 miles N.N.W. of Gandicotta.

MOVE in *arrest of Judgment*. See ARREST.

MOVEABLE, something susceptible of motion, or that is disposed to be moved. See MOTION.

A sphere is the most moveable of all bodies, *i. e.* it is the easiest to move; a door is moveable on its hinges, the magnetical needle on a pin, or pivot, &c.

Moveable is frequently used in contradistinction to fixt.

MOVEABLE Feasts. See FEASTS and EASTER.

MOVEABLES, or MOVEABLE Goods, by civilians called *bona mobilia*, are those which are capable of being removed from one place to another; or which may be concealed or perverted; as not being fixed to the ground, &c. See GOODS and CHATTELS.

In England, we have two kinds of effects, *moveable* and *immoveable*: the *moveable* are, ready money, merchandizes, bonds, book-debts, cattle, and household furniture, not fastened either with iron or nail, nor sealed in the plaster, but which may be transported without either fraction or deterioration.

In the customary laws, they say, moveables follow the person, and his proper habitation; moveables follow the body, &c. which words have different meanings in different countries. Sometimes they signify, that moveables go according to the custom of the place where is the habitation of the deceased, though he die in another place; and sometimes they signify that moveables follow the custom of the place where the defunct died.

MOVEMENT, MOTION, a term frequently used in the same sense with automaton.

The most usual movements for keeping time are watches and clocks: the first are such as shew the parts of time, and are portable in the pocket; the second such as publish it by sounds, and are fixed as furniture. See HOROLOGIUM and CHRONOMETER.

MOVEMENT, in its popular use among us, signifies all the inner work of a watch, clock, or other engine, which moves,



moves, and, by that motion, carries on the design of the instrument.

The movement of a clock, or watch, is the inside; or that part which measures the time, strikes, &c. exclusive of the frame, case, dial-plate, &c. See *CLOCK*, *CLOCK-Making*, *CLOCK Movement*, and *WATCH*.

MOVEMENT, in *Architecture*, is a term used by some writers to express the rise and fall, the advance and recess, with other diversity of form, in the different parts of a building, so as to add greatly to the picturesque of the composition. For the rising and falling, advancing and receding, with the convexity and concavity, and other forms of the great parts, have the same effect in architecture, that hill and dale, fore-ground and distance, swelling and sinking, have in landscape; that is, they serve to produce an agreeable and diversified contour, that groups and contracts like a picture, and creates a variety of light and shade, which give great spirit, beauty, and effect, to the composition.

MOVER, or *First Mover*. See *MOBILE*.

MOVER, *Perpetual*. See *Perpetual Motion*.

MOUFET, or MUFFETT, THOMAS, in *Biography*, a physician and naturalist of the 16th century, was born in London, and received his early education in that metropolis. He was then sent to Cambridge, and subsequently proceeded on his travels, which he prosecuted through several of the countries of Europe, where he contracted an acquaintance with many of the most eminent foreign physicians and chemists. Before his return he had taken the degree of M.D.; and he settled in London, where he practised physic with considerable reputation. It appears also, that he resided for some time at Ipswich. He was particularly patronized by Peregrine Bertie, lord Willoughby, and accompanied him on his embassy, to carry the ensigns of the order of the Garter to the king of Denmark. He likewise was in camp with the earl of Essex in Normandy, probably in 1591. He spent much of the latter part of his life at Bulbridge, near Wilton, in Wiltshire, as a retainer to the Pembroke family, from which he received an annual pension. He died in that retirement, about the end of queen Elizabeth's reign.

Dr. Moufet was a writer of considerable distinction in his day, and appears to have been among the first physicians who introduced chemical medicines into practice in England. He published in 1584, at Francfort, an apology for the chemical sect, which was then beginning to prevail in Germany, though much opposed by the adherents of the school of the ancients: it was entitled "*De Jure et Præstantia Chemicorum Medicamentorum, Dialogus Apologeticus*." The work displays a good deal of learning and skill in argumentation. This tract was re-published in the "*Theatrum Chemicum*," in 1602, with the addition of "*Epistolæ quinque Medicinales, ab eodem Auctore conscriptæ*," which are all dated from London in the years 1582, 3, and 4. These epistles contain a farther defence of the chemical doctrines, some keen remarks on the fanciful reasonings of the Galenists, and many sensible observations against absolute submission to the authority of great names. The last of these letters treats of the benefits of foreign travel to a physician, and describes Padua as the best medical school. His liberality, as well as his learning, was evinced in the publication of another work, "*Nosomantica Hippocratica, five Hippocratis Prognostica cuncta, ex omnibus ipsis scriptis, methodicè digesta, Libri ix.*" Franc. 1588: for the writings of the father of physic were treated with contempt by Paracelsus, and the majority of the chemical sect. The last medical work of Moufet's is entitled "*Health's Improve-*

ment; or, Rules comprising and discovering the Nature, Method, and Manner of preparing all sorts of Food used in this Nation." A corrected and enlarged edition of this book was printed by Christopher Bennet at London, 1655, 4to. It is a curious and entertaining performance, on account of the information which it contains respecting the diet used in this country at that time. From his concluding dietetic aphorism, it would seem that the English even then afforded just cause for the imputation of gross feeding, which foreigners have generally thrown upon them. "If our breakfast be of liquid and supping meats, our dinner moist, and of boiled meats, and our supper chiefly of roast meats, a very good order is observed therein, agreeable both to art, and the natures of most men." Moufet, however, was most particularly distinguished as a naturalist; and he enlarged and finished, with great labour and expence, a work entitled "*Insectorum, five minimorum Animalium Theatrum*; olim ab Edw. Wottono, Conrado Gesnero, Thomaque Pennio inchoatum." It was left in manuscript, and published in London, in 1634, by sir Theodore Mayerne, who complains of the difficulty he found in getting a printer to undertake it. An English translation of it was published in 1658. Though not free from the imperfections of an infant science, this was really a respectable and valuable work; and Haller does not scruple to place the author above all other entomologists previous to Swammerdam. Aikin's *Biog. Memoirs of Med.*

MOUGDEN, in *Geography*. See CHEN-YANG.

MOUHUN, a town of Hindoostan, in Lahore; 10 miles S. of Kooshaub.

MOUKI, a town of Arabia, in the province of Hedsjas; 60 miles S.W. of Mecca.

MOUL, *The*, a cape of Scotland, on the east coast of the island of Shetland. N. lat. 60° 24'. W. long. 1° 10'.

Moul-*Head*, a cape of Scotland, on the north coast of the island of Papa Westra. N. lat. 59° 13'. W. long. 2° 45'. — Also, a cape on the east coast of the island of Pomona. N. lat. 58° 52'. W. long. 2° 34'.

MOULAMKENG, a mountain of Thibet. N. lat. 30° 46'. E. long. 99° 56'.

MOULAPUDDY, a town of Hindoostan, in the province of Dindigul; 7 miles N.E. of Dindigul.

MOULAR, a town of Hindoostan, in the Carnatic; 10 miles N. of Tiagar.

MOULAR, *Le*, a town of France, in the department of the Po; 3 miles S.W. of Sufa.

MOULD, or MOLD, in the *Mechanic Arts*, &c. a cavity artfully cut, with design to give its form, or impression, to some softer matter applied in it.

Moulds are implements of great use in sculpture, foundery, &c.

The workmen employed in melting the mineral or metallic glebe dug out of mines, have each their several moulds, to receive the melted metal as it comes out of the furnace; but these are different, according to the diversity of metals and works. In gold mines, they have moulds for ingots; in silver mines, for bars; in copper and lead mines, for pigs or salmons; in tin mines, for pigs and ingots; and in iron mines, for sows, chimney-backs, anvils, cauldrons, pots, and other large utensils and merchandizes of iron; which are here cast, as it were at first hand.

MOULDS of *Founders of large Works*, as statues, bells, guns, and other brazen works, are of wax, supported within by what they call a *core*, and covered without with a cap or case. It is in the space which the wax took up, which is afterwards melted away to leave it free, that the liquid metal



metal runs, and the work is formed ; being carried thither through a great number of little canals, which cover the whole mould. See **FOUNDERY**.

**MOULDS of Moneyers** are frames full of sand, in which the plates of metal are cast that are to serve for the striking of species of gold and silver. See **COINING**.

A sort of concave moulds made of clay, having within them the figures and inscriptions of ancient Roman coins, are found in many parts of England, and supposed to have been used for the casting of money.

Mr. Baker having been favoured with a sight of some of these moulds found in Shropshire, bearing the same types and inscriptions with some of the Roman coins, gave an account of them to the Royal Society.

They were found in digging of sand, at a place called Ryton, in Shropshire, about a mile from the great Watling-street road. They are all of the size of the Roman denarius, and of a little more than the thickness of a halfpenny. They are made of a smooth pot or brick clay, which seems to have been first well cleansed from dirt and sand, and well beat or kneaded, to render it fit for taking a fair impression. There were a great many of them found together, and there are many of them not unfrequently found in Yorkshire ; but they do not seem to have been met with in any other kingdom, except that some have been said to be once found at Lyons. They have been sometimes found in great numbers, joined together side by side, on one flat piece of clay, as if intended for the casting a great number of coins at once ; and both these, and all the others that have been found, seem to have been of the emperor Severus. They are sometimes found impressed on both sides ; and some have the head of Severus on one side, and some well-known reverse of his on the other. They seem plainly to have been intended for the coinage of money, though it is not easy to say in what manner they can have been employed to that purpose, especially those which have impressions on both sides, unless it may be supposed that they coined two pieces at the same time by the help of three moulds, of which this was to be the middle one.

If by disposing these into some sort of iron frame or case, as our letter-founders do the brass moulds for casting their types, the melted metal could be easily poured into them, it would certainly be a very easy method of coining ; as such moulds require little time or expence to make, and therefore might be supplied with new ones as often as they happen to break.

These moulds seem to have been burnt or baked sufficiently to make them hard ; but not so as to render them porous like our bricks, by which they would have lost their smooth and even surface, which in these is plainly so close, that whatever metal should be formed in them would have no appearance like the sand-holes by which the counterfeit coins and medals are usually detected.

**MOULDS of Founders of small Works** are like the frames of coiners : it is in these frames, which are likewise filled with sand, that their several works are fashioned ; into which, when the two frames of which the mould is composed are rejoined, the melted brass is run.

**MOULDS of Letter-founders** are partly of steel and partly wood : the wood, properly speaking, serves only to cover the real mould which is within, and to prevent the workman, who holds it in his hand, from being incommoded by the heat of the melted metal. Only one letter or type can be formed at once in each mould. See **Letter-FOUNDERY**.

**MOULDS, in the Manufacture of Paper**, are little frames composed of several brass or iron wires, fastened together by

another wire still finer. Each mould is of the bigness of the sheet of paper to be made, and has a rim or ledge of wood to which the wires are fastened. These moulds are more usually called *frames* or *forms*.

**MOULDS, Furnace and Crucible Makers'**, are made of wood, of the same form with the crucibles ; that is, in form of a truncated cone : they have handles of wood to hold and turn them with, when, being covered with the earth, the workman has a mind to round or flatten his vessel.

**MOULDS for Leaden Bullets** are little iron pincers, each of whose branches terminates in a hemispherical concave, which, when shut, form an entire sphere. In the lips or sides, where the branches meet, is a little jet or hole, through which the melted lead is conveyed.

**MOULDS, Laboratory**, are made of wood, for filling and driving all sorts of rockets and cartridges, &c.

**MOULDS, Glaziers'**. The glaziers have two kinds of moulds, both serving to cast their lead : in one they cast the lead into long rods or canes fit to be drawn through the vice, and the grooves formed therein ; this they sometimes call *ingot-mould*. In the other they mould those little pieces of lead a line thick, and two lines broad, fastened to the iron bars. These may be also cast in the vice.

**MOULDS, Goldsmiths'**. The goldsmiths use the bones of the cuttle-fish to make moulds for their small works ; which they do by pressing the pattern between two bones, and leaving a jet or hole to convey the silver through, after the pattern has been taken out.

**MOULD, among Masons**, is a piece of hard wood or iron, hollowed within, answerable to the contours of the mouldings or cornices, &c. to be formed. This is otherwise called *caliber*.

**MOULD**, a cavity formed in the external surface of a body, intended to be cast of liquid or soft matter, which after a certain time will acquire solidity.

**MOULD, in Masonry**, is a templet made to a section of the stone intended to be cut. The ends or heading-joints being formed as in a cornice by means of the mould, the intermediate parts are wrought down by straight edges or circular templets, according as the work is straight or circular, upon the place. When the surface intended to be made is required to be very exact, a reverse mould is used in order to prove the work, by applying the mould in a transverse direction.

**MOULDS, among Plumbers**, are the tables on which they cast their sheets of lead. These they sometimes call simply *tables*. Besides these they have other real moulds, with which they cast pipes without folding. See each described under **PLUMBERY**.

**MOULDS, among the Glass-Grinders**, are wooden frames, on which they make the tubes with which they fit their perspectives, telescopes, and other optic machines.

These moulds are cylinders, of a length and diameter according to the use they are to be applied to, but always thicker at one end than the other, to facilitate the sliding. The tubes made on these moulds are of two kinds ; the one simply of pasteboard and paper ; the other of thin leaves of wood joined to the pasteboard. To make these tubes to draw out, only the last or innermost is formed on the mould ; each tube made afterwards serving as a mould to that which is to go over it, but without taking out the mould from the first. See **GRINDING**.

**MOULDS** used in basket-making are very simple, consisting ordinarily of a willow or osier turned or bent into an oval, circle, square, or other figure, according to the baskets, panniers, hampers, and other utensils intended. On these moulds they make, or, more properly, measure, all their work :



work: and, accordingly, they have them of all sizes, shapes, &c.

**MOULDS**, in *Ship Building*, are the shapes of the various timbers, knees, &c. made of board from the lines on the mould-loft floor, for the purpose of sawing out the various timbers, &c. to the shape required. Also thin flexible pieces of pear-tree or box, used in drawing the draughts and plans of a ship.

**Mould-Loft** is a long even floor, on which the ship is laid-off to its full size, from the draughts and several other operations, which will be correctly explained in the article **SHIP-BUILDING**.

**MOULDS**, among *Tallow Chandlers*, are of two kinds: the first for the common dipped candles, being the vessel in which the melted tallow is disposed, and the wick dipped.

This is of wood, of a triangular form, and supported on one of its angles, so that it has an opening of near a foot at top: the other, used in the fabric of mould candles, is of brass, pewter, or tin. Here each candle has its several mould. See each under **CANDLE**.

**MOULD**, among *Gold Beaters*, a certain number of leaves of vellum, or pieces of guts, cut square, of a certain size, and laid over one another, between which they put the leaves of gold and silver which they beat on the marble with the hammer. See **GOLD-Leaf**.

They have four kinds of moulds; two of which are of vellum, and two of gut: the smallest of those of vellum consists of forty or fifty leaves; the largest contains a hundred: for the others, each contain five hundred leaves.

The moulds have all their several cases, consisting of two pieces of parchment, serving to keep the leaves of the mould in their place, and prevent their being disordered in beating.

**MOULD**, or *Mold*, in *Agriculture*, the loose friable particles of earth or soil which are met with on the surface of the ground, called also natural or mother earth. (See **EARTH** and **LOAM**.) It is of different qualities in different situations. The properties of mould are in some measure distinguished by their appearances, those of a bright chestnut or hazel colour being generally good, as of this colour are the best loams, and also the best natural earths; and it is an advantage if they cut like butter, and do not stick obstinately, but are short; and tolerably light, breaking into small clods, and wrought without crusting or chopping in dry weather, or turning to mortar in wet. The next to these are the dark grey and russet moulds: the light and dark-coloured, such as is usually found on common heathy ground, is inferior, and the yellowish-red coloured the worst of all: this is commonly found in wild and waste parts of the country, and for the most part produces nothing but gorse, furze, and fern, according as the sub-soils are more or less of a light and sandy, or of a spewy gravel, or clayey nature. In all moulds of lands that are good, after rain, or breaking up, they emit a good smell. It is easily discovered by the touch whether they consist of substances entirely arenaceous or clammy, or whether they be tender, fatty, deterfiv, or slippery; or more harsh, gritty, porous, or friable.

Those moulds that have a blackish appearance, and contain much carbonaceous matter, are always found rich and good in most uses of the farmer.

It is of vast utility to have the mould of all the stiffer sorts of soil well broken down, and reduced before seeds of any kind are sown upon them. This is capable of being effected in various ways, as by turning them up in sharp ridges in the autumn, in order to have the action of the

frost in the winter, and by frequent harrowing and rolling them with rollers proper for the purpose. Also by the proper use and application of the cultivator, scarifier, and scuffler. See these different tools.

Moulds, according to Mr. Da Costa, are compound earths, of a loose soft texture, somewhat ductile while moist, and composed of earthy particles, mixed with the putrefied remains of animal and vegetable bodies. He distinguishes them by their colours into the black, not acted upon by acids, to which belongs the common vegetable mould, or garden earth; the red, which is alkaline; and the brown, some of which are not acted upon by acids, and others alkaline.

Moulds, according to Kirwan, (*Elem. of Mineralogy*, vol. i.) are loams (see **LOAM**), mixed with animal and vegetable remains, particularly from putrefaction; generally of a black, brown, yellowish, or greyish-brown colour. The properties of these are highly interesting to agriculture, and may be pretty nearly determined by comparing their weight, when dried, at 140° of Fahrenheit, with that which they lose by being heated to redness in an open fire, continued as long as any coaly substance remains in them; yet not exactly, without some nicer operations, as the animal earths will still remain undetermined, and also the vegetable ashes.

To analyse mould by means of water, Shaw proposes to wash it thoroughly in warm water in large quantities, and then to filtrate the liquor. Afterwards evaporate this to a considerable degree of concentration, and it is manifestly of a saline taste, but making no alteration in syrup of violets; therefore the salt it contains is neither acid nor alkaline, but neutral. This analysis pursued farther, the particles may be disunited and kept separate, and will be found to be a large proportion of sand, a quantity of a light mud, capable of remaining a long time suspended in water, and a heavier mud sinking immediately in water. By an analysis of any particular mould by this means, we may find its true constituent particles, and be able to mix up and compound a similar one for the growth of any peculiar plant it produces. But plants have the assistance of heat as well as moisture, in the draining their juices from the earth; therefore it may not be improper to try the effect of fire on the same subject. The common garden mould distilled in a retort in a naked fire, managed in its various degrees, affords a water, an oil and spirit like those yielded by animal subjects, and possibly arising from some extraneous particles mixed with the earth, and a dry *caput mortuum*, or indolent earth, remains in the retort.

The particles of animal, vegetable, and mineral substances, floating in the atmosphere, and thence precipitated on the earth, may give some of the properties to garden mould, and those different in different places; as is evident about London, where the mould is so impregnated with smoke, precipitated on it from the atmosphere, that it differs much from that of open countries. Shaw's Lectures, p. 64.

**MOULD**, in *Gardening*, such earthy substances as constitute soils, when reduced into a fine pulverized state in their particles. It is of different qualities, according to the nature of the earth or soil in which it is found. But the best for the general purposes of gardening is probably that which contains a large proportion of carbonaceous or vegetable matter. It is of very different colours in different cases, as hazel, dark-grey, russet, ash, yellowish-red, and various others. But the first three colours are generally considered as denoting the best qualities, and the last the most unfriendly to the growth of vegetables.

Those moulds which are capable of working well at all seasons,



seasons, are rather light and dry, perfectly mellow and fine in their particles, being well enriched with vegetable and animal matters, are mostly preferred, and capable of affording the largest crops of good vegetables of the different kinds. See EARTH and SOIL.

MOULD, *Hip*. See HIP-Mould.

MOULD on *Hops*, in *Rural Economy*, a vegetable disease, which is liable to affect the hop plant in the more advanced periods of its growth, and produce much mischief to the crop. See FEN.

MOULD, *Iron*. See IRON-Mould.

MOULD, *Vegetable*, in *Agriculture*, that sort of mould which is chiefly formed from the recrements of decayed vegetables. It forms the surface stratum of moist soils, and is, in general, of a more dark colour than that which is below it. See SOIL and VEGETABLE Mould.

MOULDINESS, a term applied to an appearance in bodies which are much exposed to the humidity of the atmosphere, and which shews itself by a kind of white down, or *lanugo*, on their surface. It is liable to affect different articles of farm produce, unless guarded against by depositing them in proper dry places. See MUCOR.

This mouldiness, when viewed with a microscope, affords a curious spectacle: being a kind of meadow, out of which arise herbs and flowers; some only in the bud, others full blown, and others decayed; each having its little root, stalk, and other parts; the figure of which may be seen in Hook's *Micrographia*. The same may be observed of the mouldiness which gathers on the surface of liquid bodies.

Mr. Bradley observed this mouldiness in a melon very accurately, and found the vegetation of these little plants to be exceedingly quick. Each plant had its seeds in great abundance, which did not seem to be three hours before they began to shoot up; and in six hours more the new plant was complete and mature, and the seed ready to fall. When the fruit had been covered with a mould for six days, its vegetative quality began to abate, and it was entirely gone in two days more; then came on a putrefaction, and the fleshy part of the melon yielding nothing but a stinking water, which began to have a gentle motion on its surface; and in two days' time maggots appeared, which in six more laid themselves up in their bags, where they continued four days, and then came out flies. These maggots were owing to the eggs of flies deposited in the putrefaction.

MOULDING, any thing cast in a mould, or that seems to have been so, though in reality it were cut with a chissel, or the axe.

MOULDING, in *Architecture*, an ornamental surface, such that all its transverse sections are equal and similar throughout the length, the transverse sections being those which are every where perpendicular to the edge or edges of the said ornamental surface.

A regular moulding has either contrary, curved, circular, or elliptic sections. See CYMATIUM, CYMA-Recta, CYMA-Reversa, ECHINUS, OVOLO, QUARTER-Round, CAVETTA, SCOTIA, APOPHYGIS, SCAPE, &c. and Plate XXI. *Architecture*.

Mouldings in assemblage are used in the formation of cornices, architraves, bases, capitals, &c.

Mouldings are either plain or enriched with eggs, and with foliage displayed in a variety of forms. Some enrichments are peculiar to certain forms of mouldings, as eggs and anechoirs, or egg and tongue to the ovolo. See Plate XXI. *Architecture*.

Mouldings, in *Gunnery*, are annexed to guns by way of ornament, and depend chiefly on the maker's fancy.

It may be observed, in general, that they should be plain

and simple, and the metal should be projected as little as possible, so that the piece may lie close on the carriage. See CANNON.

MOULDING, the act of marking out the shape of any timber, &c. from a mould given, as when it is so cut, it is said to be moulded, which is the contrary dimension from siding. See SIDED.

MOULDING, *Bed*. See BED-Moulding.

MOULDING, *Plane*. See PLANE.

MOULE, LE, in *Geography*, a town of the island of Guadaloupe; on the N. coast. N. lat. 16° 30'. W. long. 62° 27'.

MOULIN, CHARLES DU, in *Biography*, a French jurist, was born at Paris, of an ancient family, in the year 1500. He was distinguished from his early years by the facility with which he took his education. He acquired the rudiments of learning at Paris, and went to study the law at Orleans and Poitiers. He was admitted an advocate at the age of twenty-two, and acted some years as a pleader; but an impediment in his speech obliged him to retire from practice. He now devoted himself to literature, and became greatly celebrated as an author. In 1539, he published a work, entitled "Commentaire sur les Matieres Feodales de la Coutume de Paris;" and in 1551, "Observations sur l'Edit du Roi Henri II. contre les Petites Dites." This edict had arisen from the hostility between the court of France and Rome; and Du Moulin, in his work, warmly advocated the liberties of the Gallican church, which gave so great offence to the papal court, that the parliament of Paris found it necessary to pass a decree for its suppression. The zealous Catholics found means to excite the populace against him as a favourer of heresy. His house was pillaged; he quitted Paris, and retired to Germany for safety. He employed himself several years, at different towns in that country, and in Burgundy, in giving lectures on the law with great reputation. He returned to Paris, after having endured an imprisonment of four months for refusing to undertake an unjust cause; but in 1562, he quitted the metropolis, on account of the religious wars. Two years afterwards he came back, and was thrown into the Conciergerie, for a work which he printed that regarded the council of Trent. He died in 1566. He had for many years been considered in France as an oracle of jurisprudence, and of an authority equal to that of the greatest names in the science, ancient or modern. Of his own superiority he was fully sensible, and did not scruple to entitle himself "The Doctor of France and Germany;" and he would sometimes prefix to his opinions, "I, who am second to no one, and whom no one can teach any thing." His works were collected and printed in five volumes folio. Moreri.

MOULIN, PETER DU, a learned French Protestant divine, was born at Buhy, in the Vexin, in 1568. He pursued his studies, first in Paris, and afterwards in England; and from this place he proceeded to the university of Leyden, where he became a professor, and taught philosophy with applause. Being admitted to the ministry, he undertook the pastoral duty of a Protestant church of Charenton near Paris, and was soon after appointed chaplain to Catherine de Bourbon, princess of Navarre, and sister of Henry IV. In 1615, he visited England, and James I. presented him with a prebendary of Canterbury. He afterwards went to Sedan, and became professor of divinity, and had entrusted to him the principal management of the concerns of the Protestants in France. He died in 1658. He wrote a great number of works, of which the principal are "The Anatomy of Arminianism," in Latin; "A Treatise on the Keys of the Church;" "The Capuchin, or History of the Monks;"



and "A Defence of the Reformed Churches." A vein of severe satire is said to run through several of his controversial pieces. Moreri.

MOULIN, PETER DU, son of the preceding, and a clergyman of the church of England, was born, it is supposed, at Paris, about the year 1600. He studied at Leyden, where he was admitted to the degree of doctor of divinity. He afterwards came to England, and was incorporated in the same degree at the university of Cambridge. He was patronized by Richard, earl of Cork, who appointed him governor to his sons, whom he afterwards accompanied to Oxford. Here Du Moulin remained two years or more, and preached frequently in the church of St. Peter in the East. After the restoration of Charles II. he was appointed chaplain in ordinary to his majesty, and given a prebend at Canterbury, where he spent the remainder of his life. He died in 1684, in the eighty-fourth year of his age. He was author of several works, of which we may mention, 1. *The Peace of the Soul*; 2. *A Defence of the Protestant Religion*. He was author of the famous work, entitled "*Regii Sanguinis Clamor ad Cælum*," which was published at the Hague, in 1652, by M. Alexander More. Anthony Wood gives him the character of an honest, zealous Calvinist. Moreri. Wood's *Athen. Oxon.*

MOULIN. *Fer de MOULIN.* See FER.

MOULINET, a French term properly signifying a little mill, being the diminutive of *moulin*, mill.

It is used in mechanics to signify a roller, which, being crossed with two levers, is usually applied to cranes, capstans, and other sorts of engines of the like nature, to draw ropes, and heave up stones, timber, &c.

MOULINET is also a kind of turn-stile, or wooden cross, which turns horizontally upon a stake fixed in the ground; usually placed in the passages to keep out horses, and to oblige passengers to go and come one by one.

These moulinets are often set near the outworks of fortified places, at the sides of the barriers, through which people pass on foot.

MOULINS, GUYARDES, in *Biography*, a French priest and canon, who flourished towards the close of the 13th century. He is mentioned as being the first person who gave a translation of a considerable portion of the Scriptures in the French language. He was promoted, in 1277, to the deanery of his chapter, after which we hear no more of him. His translation was printed in 1487, by order of Charles VIII. Moreri.

MOULINS, in *Geography*, a town of France, and principal place of a district, in the department of the Allier, before the revolution the capital of Bourbonnois, situated on the Allier, and esteemed one of the pleasantest towns in France, having broad and clean streets: its principal trade consists in cutlery; and near it is a medicinal spring. The E. partition contains 7000, and its canton 11,074 inhabitants, in seven communes. Its W. division contains 6200, and its canton 10,525 inhabitants, in 10 communes. Its whole territory comprehends 335 kilometres. N. lat. 46° 35'. E. long. 3° 24'.

MOULINS-en-Gilbert, a town of France, in the department of the Nièvre, and chief place of a canton, in the district of Chateau-Chinon; seven miles S.W. of it. The place contains 2500, and the canton 8469 inhabitants, on a territory of 410 kilometres, in nine communes. N. lat. 46° 59'. E. long. 3° 53'.

MOULINS-le-Marché, a town of France, in the department of the Orne, and chief place of a canton, in the district of Mortagne; 18 miles N.E. of Alençon. The place

contains 878, and the canton 7781 inhabitants, on a territory of 192½ kilometres, in 20 communes.

MOULONGE ISLANDS, a cluster of small islands in the Indian sea, near the coast of Africa. S. lat. 10° 45'.

MOULTAN, a province of Hindoostan, lying principally on the E. side of the Indus; bounded on the N. by Lahore, on the E. by Delhi, on the S. by sandy deserts, that separate it from Agimere, and on the W. by Persia. It belongs at present to the people called Sikhs; and its productions are cotton, sugar, opium, galls, brimstone, &c. Its trade in the time of Aurungzebe was flourishing; but at present it is inconsiderable, on account of the rapacious disposition of its possessors.

MOULTAN, a city of Hindoostan, the capital of the fore-mentioned province, and one of the most ancient towns of Hindoostan. Although it is a place of small extent for the capital of a viceroyalty, it is strongly fortified, and much celebrated for its pagoda, which is held in great veneration by the Hindoos. It has, or lately had, a great manufacture of cottons; but its trade has much declined, partly because the river that led to it has been in a great measure choked up, and its channel spoiled. This is the modern capital of the country designed by the historians of Alexander for that of the "Malli," although the ancient capital stood nearer to Toulumba. Multan has been garrisoned ever since the year 1779, by the king of Candahar's troops. N. lat. 30° 34'. E. long. 71° 21'.

MOULTING, among *Farmers*, a term signifying the changing of the feathers in animals of the domestic bird kind. It is a process which takes place annually towards the latter end of the year, when care should be taken to have them well fed, and kept as much as possible in a sheltered situation. In some sorts of birds, as the goose, advantage is taken of this season for collecting the feathers for various useful purposes.

MOULTING in *Horses*, a term sometimes applied to horses, when they alter, change, or cast their coats towards the latter end of autumn. As they become weak at this period, they should be well kept, and not have too much work. Great care should, likewise, be taken in the cleaning and dressing of them.

MOULTING, in *Natural History*. See MOLTING.

MOULTONBOROUGH, in *Geography*, a town of America, in New Hampshire, now called *New Hampton*; which see.

MOULTRIE FORT. See SULLIVAN'S Island.

MOULTRIEVILLE, a town lately settled on Sullivan island, South Carolina. It is a place, containing 200 dwelling-houses, much resorted to by the inhabitants of Charleston, during the summer and autumn, both for pleasure and health.

MOUND, a term used for a bank, rampart, or other fence, particularly of earth; or of earth and stone.

MOUND, or *Mond*, in *Heraldry*, is a ball or globe with a cross upon it; such as our kings are usually drawn with, holding it in their left hand, as they do the sceptre in the right.

MOUNENESS, in *Geography*, a cape on the S.E. coast of the island of Unst, one of the Shetland islands. N. lat. 61° 3'. W. long. 1° 2'.

MOUNT, an elevation of earth, called also *mountain*.

The words *mount* and *mountain* are synonymous; but the former is scarcely ever used in prose, unless when accompanied with some proper name; as mount *Ætna*, mount *Gibel*, mount *Lebanon*, mount *Sinai*, mount *Atlas*, mount *Parnassus*, &c.



**MOUNT Airy**, in *Geography*, a town of America, in Surry county, Carolina; 400 miles from Washington.

**MOUNT Baker**, a mountain on the W. coast of North America. N. lat.  $48^{\circ} 39'$ . E. long.  $238^{\circ} 20'$ .

**MOUNT Battock**, a mountain of Scotland, in the W. part of the county of Kincardine; 16 miles N.W. of Bervie.

**MOUNT'S Bay**, a bay in the English channel, on the S. coast of the county of Devon, between the Land's End and Lizard Point. N. lat.  $50^{\circ} 7'$ . W. long.  $5^{\circ} 20'$ .

**MOUNT Bethel**, *Upper* and *Lower*, two townships of America, in Northampton county, Pennsylvania; both containing 2234 inhabitants.

**MOUNT Calder**, a barren mountain, which forms the extreme S. point of Port Protection, in the N.W. part of the Prince of Wales's Archipelago.

**MOUNT Calvary**. See CALVARY.

**MOUNT Camel**, a mountain of New Zealand, at the N. extremity of Eäheinomauwe; 30 miles S.S.E. of Cape Maria Van Diemen.

**MOUNT Campbell**, a mountain on the N.E. coast of Ker-guelen's land. S. lat.  $40^{\circ} 12'$ . E. long.  $70^{\circ} 20'$ .

**MOUNT Carmel**, *Knights of*. See CARMEL.

**MOUNT of Cocos**, in *Geography*, an island in the South Pacific ocean, discovered by Le Maire and Schouten in the year 1616. The island is said to be high and covered with trees, particularly those of the cocoa-nut; the inhabitants are handsome, strong, and well proportioned, having hair of various colours, which is worn in different forms; they are thieves, and anxious to obtain iron. The navigators procured cocoanuts, bananas, yams, some small hogs, and fresh water. This island is called by the natives "Kootabee." S. lat.  $16^{\circ}$ . E. long.  $177^{\circ}$ .

**MOUNT Desert**, an island, consisting of a valuable tract of land, on the coast of Hancock county, in the state of Maine. On the S.E. side are two considerable islands, called "Cranberry islands," which serve to form a harbour in the gulf that sets up on the S. side of the island. The whole island contains 1121 inhabitants. The northerly part was formed into a township, called Eden, in 1796. The south-eastermost part of the island lies in about N. lat.  $44^{\circ} 12'$ . W. long.  $68^{\circ} 10'$ . On the main land, opposite to the N. part of the island, are the towns of Trenton and Sullivan. It is 335 miles distant N.E. from Boston.

**MOUNT Edgcombe**. See EDGECOMBE.

**MOUNT Edgcomb**, a mountain or eminence on the W. coast of the entrance into Plymouth harbour, on the coast of Devonshire. N. lat.  $50^{\circ} 21'$ . W. long.  $4^{\circ} 8'$ .

**MOUNT-Egg**, in *Mining*. In the tin-works, after the tin from the burnt ore is melted down, and re-melted, there will sometimes remain a different slug in the bottom of the float; this they call mount-egg; and though of a tin colour, yet it is of an iron nature, as hath been found by applying a magnet to it.

**MOUNT Fairweather**, in *Geography*, a mountain on the W. coast of North America; 12 miles N.E. of Cape Fairweather.

**MOUNT Felix**, a lofty cape on the N.E. coast of Africa, at the entrance of the Arabian gulf; 40 miles W.N.W. of Cape Guardafui. N. lat.  $12^{\circ}$ . E. long.  $50^{\circ} 40'$ .

**MOUNT Gardner**, a mountain and promontory on the S.W. coast of New Holland, forming the E. boundary of King George III.d's Sound. S. lat.  $35^{\circ} 4'$ . E. long.  $118^{\circ} 29'$ .

**MOUNT Guard**, in *Military Language*. See GUARD.

**MOUNT Hellicy**, in *Geography*, a mountain of considerable height in the island of Barbadoes.

**MOUNT Hillary**, or *St. Hillary's Mountains*, some moun-

tains of Ireland, in the county of Cork, S. of the river Blackwater, between Mallow and Millstreet.

**MOUNT Holly**, a town, or rather a village, with a post-office, in Burlington county, New Jersey, on the banks of Ancocus creek, 12 miles S.E. of Burlington.

**MOUNT Holly**, a township in Rutland county, Vermont, formed out of a part of Wallingsford, a part of Ludlow, and a gore of land between them; containing 668 inhabitants.

**MOUNT-Hope Bay**, a bay on the N.E. part of Narraganset bay.

**MOUNT Joli**, lies on the northern coast of the gulf of St. Lawrence, in Labrador; and "Mount Island" lies on the same coast, in N. lat.  $50^{\circ} 5'$ . W. long.  $61^{\circ} 35'$ .

**MOUNT Joy**, a Moravian settlement in Pennsylvania; 16 miles from Litiz.—Also, the name of two townships in Pennsylvania; the one in Lancaster, the other in Adam's county.

**MOUNT Leinster**, a high and rocky mountain of Ireland, in the county of Wicklow, on the borders of Wexford. It consists of granite. It is about 12 miles S.S.E. from Carlow.

**MOUNT Major**, a mountain of America, in New Hampshire, on the side of lake Winnipissiokee. N. lat.  $43^{\circ} 23'$ . W. long.  $71^{\circ} 20'$ .

**MOUNT Misery**, a mountain of the island of St. Christopher, near the W. end.—Also, a town of America, in the state of Connecticut; eight miles N.E. of Norwich.

**MOUNT Olympus**, in *Ancient Geography*. See OLYMPUS.

**MOUNT Olympus**, in *Geography*, a mountain on the W. coast of North America. N. lat.  $47^{\circ} 50'$ . E. long.  $236^{\circ} 24'$ .

**MOUNT Orgueil Castle**, called also "Gowray castle," from an adjacent village, derives its name of Orgueil from the promontory on which it is situated, which was given to it, according to vulgar tradition, by Henry V., or rather by the duke of Clarence. Of this edifice in the isle of Jersey, we have historical record as early as the reign of king John, before whose time it had been a considerable fortress, and by whom it was repaired and re-fortified. This castle still stands, and presents to the observer a grand appearance, though in a state of decline; five miles W. of St. Helier.

**MOUNT Paterfon**, a mountain on the N. coast of Chatham, in the North Pacific ocean; 10 miles W. of Cape Young.

**MOUNTS of Piety**, are certain funds, or establishments, in Italy, where money is lent out on some small security. We had also mounts of piety in England, raised by contributions for the benefit of people ruined by the extortions of the Jews.

The name "mons pietatis" came with the invention from Italy, and is equally old, if not older. Funds of money formed by the contributions of different persons, for some specified end, were long before called "montes." In the first century of the Christian era, free gifts were collected and preserved in churches by ecclesiastics, partly for the purpose of defraying the expence of divine service, and partly to relieve the poor. Such capitals which were considered as ecclesiastical funds, were by Prudentius, in the beginning of the fifth century, called "montes annonæ," and "arca numinis." Tertullian (Apolog. cap. 39.) calls them "deposita pietatis," and hence has been formed the denomination of "montes pietatis."

In process of time those banks, that were employed in Italy, during the thirteenth and fourteenth centuries, to borrow money in the name of states, for which the public



revenues were mortgaged and interest paid, were also called "montes." In this sense the word is used by Italian historians of much later times. These loan-banks, or "montes," received various names, sometimes from the princes who established them, sometimes from the use to which the money borrowed was applied, and sometimes from the objects which were mortgaged. The popes gave to their loans, in order to raise their sinking credit, many of those spiritual advantages, which they conferred on the "montes pietatis." See *LOAN-Banks*, and *LOMBARDS*.

**MOUNT Pleasant**, in *Geography*, a post-town of America, in West Chester county, New York, on the E. side of Hudson's river; containing 2704 inhabitants.—Also, the name of a township in Adam's county, Pennsylvania.—Also, a village of Maryland, situated partly in each of the counties of Queen Anne and Caroline; about 11 miles E. of the town of Church-Hill.

**MOUNT Rainier**, a mountain of North America, in New Georgia. N. lat.  $47^{\circ} 3'$ . E. long.  $238^{\circ} 2'$ .

**MOUNT Sinai**, *St. Catharine of*. See *CATHARINE*.

**MOUNT St. Augustine**, an island in the North Pacific ocean, near the W. coast of North America, just within the entrance of Cooke's inlet, which rises with an uniform ascent to the centre of the island, inclining somewhat to its eastern side. The passage between the island and the main land is about six miles. The island itself is about 27 miles in circuit; and from its lofty conical eminence down to the water-side, it is covered with snow and ice, through which neither tree nor shrub could protrude. The landing is difficult on account of the detached rocks, which at the distance of about a quarter of a mile from the shore surround it. N. lat.  $59^{\circ} 22'$ . E. long.  $207^{\circ} 9'$ .

**MOUNT St. Elias**, a mountain on the W. coast of North America, about 36 miles from the Pacific ocean, perpetually covered with snow. N. lat.  $60^{\circ} 22'$ . E. long.  $219^{\circ} 21'$ .

**MOUNT St. Helen's**, a mountain on the W. coast of North America. N. lat.  $46^{\circ} 9'$ . E. long.  $203^{\circ} 1'$ .

**MOUNT Stephens**, a mountain on the W. coast of North America; five miles N. of Point Philip.

**MOUNT Talbot**, a small post-town of Ireland, in the county of Roscommon, situated on the river Suck, and 76 miles W. by N. from Dublin.

**MOUNT Tirza**, a place of America, in Parson county, North Carolina, having a post-office; 296 miles from Washington.

**MOUNT Tom**, a noted mountain of America, on the W. bank of Connecticut river, near Northampton.—Also, the name of a mountain between Litchfield and Washington, in Connecticut.

**MOUNT Vernon**, a town of America, in Kennebeck county, and State of Maine; 17 miles N.W. of Hallowell.

**MOUNT Vernon**, the seat of the late GEORGE WASHINGTON, pleasantly situated on the Virginia bank of Patowmac river, in Fairfax county, Virginia, where the river is nearly two miles wide; nine miles below Alexandria, 127 from Point Look-out at the mouth of the river, and 280 miles from the sea. The area of the mount is 200 feet above the surface of the river; and after furnishing a lawn of five acres in front, and about the same in rear of the buildings, falls off rather abruptly in those two quarters. On the N. end it subsides gradually into extensive pastures; while on the S. it slopes more steeply, in a short distance, and terminates with the coach-house, stables, vineyards, and nurseries. On either wing is a thick grove of different flowering forest trees. Parallel with them, on the land side, are two spacious gardens, into which one is led

by two serpentine gravel walks, planted with weeping willows and shady shrubs. The mansion-house itself appears venerable and convenient; and viewed from the land side, the whole assemblage of buildings bears a resemblance to a rural village. A small park on the river, where the English fallow deer and the American wild deer are seen through the thickets, alternately with the vessels as they are sailing along, give a romantic and picturesque appearance to the whole scenery. On the opposite side of a small creek to the northward, an extensive plain, exhibiting corn-fields and cattle grazing, affords in summer a luxuriant landscape; while the blended verdure of woodlands and cultivated declivities, on the Maryland shore, variegates the prospect in a charming manner. Such are the philosophic shades to which the commander-in-chief of the American army retired in 1783. at the close of a victorious war; which he again left in 1789 to dignify with his unequalled talents the highest office which his fellow-citizens could confer: and hither he again retreated in 1797, loaded with honours and the benedictions of his country. Here, in 1798, he again heard and obeyed the call of his endangered country, to command her armies, but was at length summoned on the 14th of December 1799 to join the heavenly hosts. Morse. See *WASHINGTON*.

**MOUNT Warning**, a mountain on the E. coast of New Holland. S. lat.  $28^{\circ} 22'$ .

**MOUNT Washington** lies in the upper part of the island of New York.—Also, one of the highest peaks of the White Mountains, in New Hampshire.—Also, the south-westernmost township of Massachusetts, in Berkshire county, 158 miles W. by S. from Boston; incorporated in 1779, and containing 291 inhabitants.

**MOUNTAGU, RICHARD**, in *Biography*, a learned prelate of the church of England, and an excellent writer on ecclesiastical antiquities, was born in 1578, at Dorney, in Buckinghamshire. He was educated in the classics at Eton, and thence he proceeded, in 1594, to King's college, Cambridge. He rose rather rapidly in the church, and in 1610 he edited, in Greek, "Gregory Nazianzen's Invektives against Julian," with the notes of Nonnius. In 1624 he published a piece in answer to a pamphlet, entitled "A Gag for the New Gospel." Mountagu's reply was entitled "A New Gag for an Old Goose;" this was viewed by some of his opponents in a very serious light, and a prosecution was commenced against him, but he had skill enough to evade it by applying to the king to be allowed to appeal to himself. James consented, and the work was entitled "Appello Cæsarem." This appeal increased the number of his enemies, but in proportion to the odium heaped upon him, he increased in favour at court, and in 1628 he was promoted to the bishopric of Chichester, though he was at that very time under the censure of the house of commons. He now applied himself to his favourite subject, church antiquities, and published, in 1635, "Originum Ecclesiasticarum Apparatus," *Tomus primus*. In 1638 he was translated to Norwich, in which he became distinguished as a persecutor of the Puritans. In 1640 he completed his "Originum Ecclesiasticarum," and died in the following year. He was author of many other works, enumerated in the *Biogr. Brit.* to which the reader is referred.

**MOUNTAINS, MOUNTAINOUS Country, &c.** In the language of common life, the more considerable of those inequalities with which the surface of the earth is diversified are generally termed *mountains*, while those of inferior elevation are distinguished by the appellation of *hills*. It is unnecessary to point out the insufficiency of this popular but



## MOUNTAINS.

but vague distinction, for which, by the geologists of the present day, especially those of the Wernerian school, a division has been substituted, which is far better adapted to the present advanced state of geognosy and physical geography.

The inequalities on the surface of the earth may be divided into two great classes, *viz.* the bottom of the sea, and the dry land; for the former of these, see the article SEA. The dry land, with regard to its inequalities, is divided into high land and low land; the former denoting an uneven tract of land considerably elevated above the level of the sea; the latter conveying the idea of an extensive country quite flat, or of inconsiderable elevation above the sea, chiefly composed of plains, but also hilly where it borders on alpine country; and if groups of mountains occur in it, these are always small, and occupy its central part.

High land is principally composed of alpine, mountainous, and hilly land; here and there also some plains occur in it.

Alpine land is formed of groups of mountains, which again are composed of mountain chains, or connected series of single mountains. Mountain groups are generally highest in the middle, and each of them, in an alpine country, takes a particular direction; they are separated from each other by plains and vallies, but more frequently by mountainous or hilly country. Each group constitutes a connected whole, both with regard to its base and its acclivity: it is not, however, an entire mass, but intersected in many places, though never quite down to its foot or base: where the latter takes place, the mountain group is considered as terminated.

The second feature in the general aspect of high land is mountainous land; it is composed of single mountains collected into chains, which however, not being joined together by a central or high mountain chain, are never seen to form groups.

The third component part of high land, is hilly land: which consists of gentle rounded and undulated elevations; it is much lower than the preceding, and by means of the plains, which sometimes constitute a part of high land, forms a transition into low land.

In considering the various parts of which alpine land is composed, we observe that a mountain group always consists of several mountain chains, the highest part of which, extending through the whole group without being intersected, is called the high mountain chain, or also the high middle chain, in cases where its situation is nearly in the middle of the group; from it a great number of inferior chains proceed under various angles, which form the acclivity of the group, and are called subordinate and lateral chains. They vary in magnitude and extent; the most considerable, called also chief mountain chain, is that which, proceeding from the middle of the high mountain chain, reaches to the foot of the group; the other chains either shoot from the foot of the group towards the principal mountain chain, but never reach the high mountain chain; or they proceed from the high mountain chain, without however, reaching the foot of the group. The summit of a mountain chain is called its ridge, that of the highest chain the highest ridge. The concavities in a mountain group, which generally run parallel with its longitudinal direction, or separate one chain from another, are called *vallies*; which see.

Mountain groups, with regard to their extent, are divided into principal groups, or such as are from 30 to 40 geographical miles in length, for instance, the alps of Switzerland, and Pyrenees; into middle-sized mountain groups (*Mittelgebirge*), which have an extent of from 10 to 20 geographical miles, such as the Hartz mountains, the Ruelengebirge, &c.; and into small mountain groups,

which are only from two or three to ten geographical miles in length. With regard to their height, mountain groups are called high, if their elevation exceed 1000 toises, or 7000 feet; as is the case with the Andes in South America, and the Alps of Switzerland, Savoy, Tyrol, and the Pyrenees in Europe. They are of a middle height, if their ridge is elevated from 500 to 1000 toises above the level of the sea; such as several mountain groups of Bohemia, Franconia, &c. Low mountain groups are from 100 to 500 toises, or from 700 to 2500 feet high. Generally the length of a mountain group is proportionate to its height, and to the breadth of its base. If the length and the breadth of the base be nearly alike, the mountain group is called massive; if, on the other hand, the length is very considerable in comparison of the breadth of the base, it is denominated a long mountain group.

Another distinction of mountain groups is derived from the difference in the form and the connection of the mountains and mountain chains of which they are composed. Thus we have common, alpine, and conic mountain groups. The common mountain groups have a middle-sized, lengthened principal mountain chain, which gives out shorter lateral chains, and the individual mountains of which these chains are composed are singly aggregated in rows: they are mostly mountain groups of an intermediate height and extent. In the conical groups the individual mountains are for the most part singly aggregated like the preceding, but only joined together at their foot, or not higher up than the declivity, by which the conical form is produced, which principally characterizes the mountains of the *fletz-trap* formation. The alpine mountain group does not consist, like the common group, of simple rows of mountains, the summits of which are singly projecting, but as it were of pyramidally aggregated clusters; and is therefore to be considered as a double aggregation. These alpine mountain groups are the most extensive, and their highest ridges and summits generally consist of granite.

With regard to the different parts of single mountains, we distinguish the foot, the acclivity, and the summit. The foot is generally very flat, and more or less extensive; the acclivity, or the space between the foot and the summit, is the most considerable and usually the steepest part of the mountain, sometimes even forming perpendicular precipices: the more gentle and gradual the ascent of a mountain, the richer it generally proves in ores. The summit varies both with regard to its steepness and shape, which latter is for the most part indicative of the nature of the rock of which it is composed; gneiss and transition rocks forming flat or round-backed; clay slate conical, and basalt, &c. short and obtuse conical summits, while granite and lime-stone mountains are often characterized by sharp-pointed summits or peaks. If several of the mountains in a group are flattened, such a ridge is called a *platteforme*. Very steep and lofty summits are called peaks, needles, (*aiguilles*), horns. Sometimes the summit is marked by a depression; sometimes it is intersected by ravines, and the inequalities thus formed are called caps or kuppen.

Though mountains have been emphatically called "*la charpente et l'ossature du globe terrestre*," yet even the most elevated of them must appear as slight rugosities only, when their proportion to the diameter of the earth is considered: for the highest mountain of Europe, the Montblanc, is, on the surface of our planet, what the protuberance of a line would be on the surface of a globe of about 21 feet in diameter. It is not a long time that we have obtained correct notions of the heights of mountains; before the barometer was applied to the measurement of altitudes, their



# MOUNTAINS.

their elevation was generally greatly exaggerated by travellers, so much so that the learned jesuit Riccioli, who flourished towards the middle of the 17th century, gives it as his opinion that mountains like the Caucasus may have a perpendicular elevation of 50 Italian miles; and Isbrand Ides, in his embassy to China, having traversed some mountains of Siberia, states their height to be about 5000 toises. For the mode of computing the height of mountains by means of the *barometer*; see that article.

Table of the Heights of Mountains and Hills.

OF EUROPE.		English Feet above the Level of the Sea.	English Feet.
<i>England and Wales.</i>			
Snowden, Caernarvonshire	-	3568	
Cader Idris, Merionethshire	-	3550	
Crofsfell, Cumberland	-	3390	
Helvellyn, ibid.	-	3324	
Saddleback, ibid.	-	3050	
Wharfedale, Yorkshire	-	2480	
Ingleborough, ibid.	-	2380	
Moel-Elian, Caernarvonshire	-	2371	
Rippon Tor, Devon	-	1540	
Wever hills, Staffordshire	-	1500	
Penmaen-Mawr, Caernarvonshire	-	1400	
Wrekin, Shropshire	-	1400	
Brown-Willy, near Bodmin, Cornwall	-	1368	
Malvern hills, in Herefordshire; the Herefordshire beacon above the level of the plain	-	1260	
the Worcestershire beacon	-	1300	
Ax-Edge peak, above the town of Derby	-	1200	
<i>Scotland.</i>			
County of Mid Lothian.			
Logan-house hill, one of the highest of the Pentlands	-	1700	
Caernethan, one of the Pentlands	-	1700	
Kirk-Yetton, ditto	-	1544	
Castle-law	-	1390	
Spittal-law	-	1360	
Arthur-Seat, vicinity of Edinburgh	-	810	
Braid hills	-	690	
Dalmahoy hill	-	680	
Salisbury craigs	-	550	
Craiglockart hill	-	540	
Corstorphine hill	-	470	
Craigmillar	-	360	
Calton hill, vicinity of Edinburgh	-	350	
East Lothian.			
Traprain-law	-	700	
Bals rock	-	400	
West Lothian.			
Cairn-Naple	-	980	
Cockleren	-	980	
Hillhouse hill	-	698	
Binny craig	-	680	
Ardgath hill	-	540	
Berwickshire.			
Dunfe-law	-	630	
Selkirkshire.			
Black-house heights	-	2370	
Hanginshaw	-	1980	
Roxburghshire.			
Cheviot hills	-	2682	
Millenwood-Fell	-	2000	
Windhead hill	-	2000	
Tudhope	-	1830	
Wisp hill	-	1830	
Ruber's-law	-	1419	
Eildon hills, the most westerly and highest	-	1300	
Dunian's hill	-	1024	
Minto hill	-	858	
Peeblesshire.			
Dollarburn, by estimation	-	2840	
Broad-law	-	2800	
Glumfeugh	-	2200	
Hillsfclough	-	2100	
Dundroigh, or Druid's hill	-	2100	
Minchmoor hill	-	2000	
Carden hill	-	1400	
Lanarkshire.			
Tinto hill, 1720; according to others	-	2432	
The mine-master's house at Leadhills, which is the highest inhabited place in Great Britain	-	1564	
Westraw	-	1000	
Town of Lanark	-	660	
Dumfrieshire.			
Hartfell	-	3304	
Some accounts make the height of this mountain but 2800 feet from the sea. It is probable that this mensuration may rather intimate its height above Moffat. This mountain should be carefully measured, as it appears to be the highest in the south of Scotland.			
Black Larg, next Ayrshire	-	2890	
Lowther hill	-	2522	
Ettrick pen, in Eskdale Muir	-	2220	
Queensberry hill	-	2140	
Cairn-Kinnow, near Drumlanrig	-	2080	
Tennis hill, in Tarres	-	1346	
Langholm hill	-	1204	
Erickstæne Braehead	-	1118	
Ford of the Clyde, above Elvan Foot	-	1058	
Constitution hill, near Moffat	-	1004	
Burnswark hill	-	740	
Moffat	-	582	
Repentance Tower	-	350	
Ward-law	-	326	
Annan hill	-	256	
Wigton and Kirkcudbright.			
Criffle	-	1895	
Cairnsmuir	-	1737	
Ben cairn	-	1200	
Cairn-harrah	-	1100	
Cairn-pat	-	800	
Ayrshire.			
Carleton hill	-	1554	
Craig of Ailfa	-	940?	
Island			



# MOUNTAINS.

	English Feet.		English Feet.
Island of Arran.		Banffshire.	
Goatfield	2945	Knock hill	2500
		Lochavon hill	1750
Renfrewshire.		Invernesshire.	
Misty-law	1240	Ben-Nevis, the highest mountain in Great Britain	4380 or 4350
Nielston craig	820	Cairngorum	4050
Stirlingshire.		Meal-Fourvouny	3070
Ben-Lomond	3262	Craig-Phatrick	1150
Wood hill	1620		
Campsie hills	1500	Rossshire.	
Clackmananshire.		Ben-Wevis	3720
Ben Cleugh, the highest summit of the Ochils	2420?	Sutherlandshire.	
Fifehire.		Beinmore, Affynt	3903
Lomond hills	1650	Caithnesshire.	
Perthshire.		Paps of Caithness	1929
Ben Lawers	4051 or 4015	Ord of Caithness	1250
Ben More	3870 or 3903		
Bein-Gloe	3724	Ireland.	
Bein-Deirg, or the Red Mountain	3550	Macgillicuddy's Reeks, county of Kerry, the highest mountain in Ireland	3404
Ben Voirlich	3300	Sliebh-Dorin, county of Londonderry	3150
Schehallien	3281 or 3564	Knock-Mele-Down, mountains dividing Cork and Tipperary from Waterford	2700
Ben Ledi	3009	Croagh-Patrick, county of Mayo	2666
Benivenou	3000	Nephin, ibid.	2640
Ben Chochan	3000	Mangerton, county of Kerry, above the lake of Killarney	2505
Ben Chonzie	3922	Mourne hills, county of Down	2500
Benachally	1800	Commerach-Ridge, county of Waterford	2160
Birnam hill	1580	Croaghan Kinsnelly, barony of Arklow	1850
King's Seat	1238	Sawell, county of Londonderry	1600
Kinburnie	1151	Slenish mountain, county of Antrim	1390
Dunfinnan hill	1024	Benbradagh, county of Londonderry	1300
Belmont hill	759	Alt-Eglisli hill, ibid.	1300
Barry hill	400	Benyevenach, ibid.	1250
Argyleshire.		Sliebh-Gallan, ibid.	1250
Cruachan	3390 or 3300	Donald's hill, ibid.	1200
Bedinam-braw, in Glencoe	3150	Kedy, ibid.	1100
Beinn-an-oir, highest pap of Jura	2470	Croneban, county of Wicklow	1000
Beinn-a-chaolais, the most southern of the paps of Jura, rises above the sound of Isla	2359	Croaghmore, county of Antrim	600
Argus, or Forfar.		Isle of Man.	
Cat-law	2264	Snafel, centre of the island	1740
Dunnichen hill	720		
Mearns, or Kinkardineshire.		Iceland.	
Mount Battock	3450	Snæfial	6860
Kloachnabane	2370	Hecla	4900
Kerlavick	1890	Thyril	1800
		Torfa	1400
Aberdeenshire.		Norway.	
Scairfoch	3400	Swicku, according to Retzius	6658
Gariach	3000	———, according to Bergmann, only	4377
Mulbrax hill	2700	Chain of Dofra-fial	3600
Peter hill	2700	Hornalen, province of Bergen	3000
Buck hill	2377	Chain of Lang-fial	2200
Cairn Ferg	2100	Siken-Ulrich, province of Bergen	1600
Fare hill	1793	Høy-feldt, ibid.	1500
Cairn Monearn	1020		
Benachie	1000	Sweden.	
Mormond hill	810	Areskutan, Jemtland	6180
		Rättvik	6000
		Sylflællen	



# MOUNTAINS.

	English Feet.		English Feet.
Sylfiællen - - - - -	4020	Castle of Kaiferau, near the summit of the Licht-	
Hunne, West Gothland - - -	716	meßberg (Paris feet) - - -	3330
Taberg, ibid. - - - - -	420	Alpsteig (Paris feet) - - -	3297
<i>Hanover.</i>		<i>Austria.</i>	
Bröcken, or Blocksberg, Hartz - -	3690	Summit of the Priel - - - -	6565
Heinrichshöhe, ibid. - - - -	3926	—— of the Oetfcher - - - -	5990
Bruchberg - - - - -	2800	—— of the Nafsberg - - - -	5215
<i>Bohemia.</i>		Mitterfee (Paris feet) - - -	3081
Ochsenkopf, highest summit of the Fichtelgebirge	3980	Claufs, a pass on the borders of Stiria and Austria, (Paris feet) - - - -	2772
The highest summit of the Ertzgebirge, the chain that separates Bohemia from Saxony - -	3781	Langgeseids (Paris feet) - - -	2344
The Schneeberg, in the Fichtelgebirge, between Franconia and Bohemia - - -	3618	Town of Eifenertz - - - -	2056
Donnersberg, or Millefchau, the highest summit of the Mittelgebirge - - -	2562	<i>Carinthia.</i>	
<i>Thuringia.</i>		Groß Kogel - - - - -	9700
Schneekopf, according to v. Zach, in French feet,	3275	<i>Hungary.</i>	
<i>Silesia.</i>		Peak of Lomnitz, the highest summit of the Car-	
Schneekopf, the highest summit of the Riesen-		pathians - - - - -	8640
gebirge - - - - -	4950	Great peak of Kefmark - - -	8508
Große Rader - - - - -	4972	Krivan mountain - - - - -	8343
Tafelfichte, Riefengebirge - - -	3781	Gold mine of the Krivan - - -	6954
Zobtenberg - - - - -	2885	Fleischbank - - - - -	6168
<i>Switzerland.</i>		Budisslaw mountain in Transylvania - -	6888
Mont Blanc, highest mountain in Europe, ac-		<i>Turkey in Europe.</i>	
cording to Saussure - - - - -	15,680	Mount Athos, according to Kästner - - -	3353
Mont Rosa - - - - -	15,555	<i>Spain.</i>	
Jungfrauhorn - - - - -	13,730	Pic blanc, in the Pyrenees - - -	10 205
Ridge of the Furca - - - - -	13,100	Tornavocos, estimated between - - -	8 and 9000
Nägerhorn - - - - -	12,217	Cañile mountains, the elevation of the highest	
Mönch-horn - - - - -	11,604	summits, estimated at from - - -	8 to 9000
Buet - - - - -	10,112	Guadarrama, estimated between - - -	8 and 9000
St. Gothard - - - - -	9075	Pic de los Reyes, Pyrenees - - -	7620
Hospice of the Great St. Bernard, the highest in-		Montferrat, in Catalonia - - -	3300
habited ground in Europe - - -	8040	Filabres - - - - -	2000
Hospice of Little St. Bernard - - -	7200	Highest point of Gibraltar - - -	1439
Hospice of St. Gothard - - - -	6817	<i>Portugal.</i>	
Passage of Mount Cenis - - - -	6778	Serra del Malhao, province of Beira, the highest	
<i>Tyrol.</i>		summit of the Serra de Estrella, estimated	
Oertler Spitze, the third highest mountain in		between - - - - -	5 and 6000
Europe - - - - -	15,430	Serra de Marao, estimated at from - - -	3 to 4000
Great Glockner (in Paris feet) - -	11,982	Murro de Burrageiro - - - -	3500
Hohenwarzhöhe (Paris feet) - - -	10,393	<i>France.</i>	
Roth-horn - - - - -	9640	Loucir, Department of the High Alps - -	14,451
Salmshöhe (Paris feet) - - - -	8361	Loupilon, ibid. - - - - -	14,144
Silver-mine near Stertzigen (Paris feet)	7512	Jocelme, ibid. - - - - -	13,869
Brenner mountain - - - - -	5109	Olan-en-Valgodmar, ibid. - - -	13,838
<i>Saltzburg.</i>		All-Elis, Helvetic Alps - - -	12,194
Ostelle - - - - -	12,800	Mont Perdu, the highest summit of the Pyrenees	11,283
Watzmann - - - - -	9600	Aiguille noire de Nevache, Dep. High Alps	10,505
Rathhausberg - - - - -	8800	Pic d'Autane, ibid - - - - -	9702
Mine in Rathhausberg (Paris feet) -	6195	Canigou, Department of Eastern Pyrenees -	9290
<i>Stiria</i>		Pic d'Arbizon, ibid. - - - - -	8344
Highest summit of the Wechfels (Paris feet)	5352	Breven, Savoy - - - - -	8300
Saddle in Waidbaden (Paris feet) -	4798	Allée blanche, ibid. - - - - -	7424
Saddle of the Prenhübel (Paris feet)	3734	Mont d'Or, Auvergne - - - -	6707
		Puy de Sanfi, ibid. - - - - -	6700
		Plomb du Cantal, ibid. - - - -	6355
		Mine de Pezey, Department of the High Alps	6016
		Puy de Loucire, Auvergne - - -	4900
		Puy - - - - -	



# MOUNTAINS.

	English Feet.		English Feet.
Puy de Dôme, <i>ibid.</i> according to Mechain	4518	Peak of Jesso, in the island of Jesso, in the sea of Japan	7680
Puy de Cleirfou, <i>ibid.</i>	4280	Peak of Quilpaert, in the island of the same name, in the sea of Japan	6400
Puy de Pariou, <i>ibid.</i>	4265	Mountain in Behring's isle to the east of Kamtschatka	6000
Puy de Sandoire, <i>ibid.</i>	3980		

## Italy.

Etna	10,963
Monte Rotondo, Corsica	8694
Monte Velino, Naples	7878
Monte Cimone	6401
Monte S. Angelo, Lipari Islands	5260
Vesuvius	3900
Porto Fino, Apennines	1920
Monte Nuovo, Naples	1200

## Russia in Europe.

Wolchonsky Lines, by estimation (Paris feet)	3000
Tohaturdag, or Palat	6600

## MOUNTAINS OF ASIA.

### Turkey in Asia.

Mount Lebanon, estimated at	9520
Mount Ararat	9500
Chain of Olympus	6500
Chain of Mount Ida	4960
Mount Gargara	4960
Mount Carmel	2000

### Asiatic Russia.

Halitzkoi, Altaic chain	10,735
Tigeretzkoi, <i>ibid.</i>	10,735
Torgonskoi, <i>ibid.</i>	10,700
Katunayaiskoi, <i>ibid.</i>	10,650
Avatsha, volcano, Kamtschatka	9600
Sludina mountain, Altaic chain	7722
Schlangenberg, <i>ibid.</i>	6050
Tagani, Uralian chain	4912
Dihigalgo, <i>ibid.</i>	4912
Kyria, <i>ibid.</i>	3015

### China.

Petcha, or Hamar, Chinese Tartary; estimated height above the plains of China	15,000
Sochondo mountains, <i>ibid.</i>	12,800
Me-Lin, estimated at	8000
Mountains of Corea, Chinese Tartary	4480

### Tibet and Bootan.

The highest summit of the mountains of Tibet, according to colonel Crawford, above Soomoonang, Bootan	25,000
Ghasa mountains, <i>ibid.</i>	14,500
Chumularce, Tibet	13,030
	11,960

### Hindoostan.

The Ghauts	3000
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### Indian Islands.

Mount Ophir, Sumatra	13,842
Volcano of Sumatra	12,465
Egmont mountain, the most northern of the islands of New Zealand, estimated at	11,433
Mountain of Parmesan, in the island of Banca, one of the Sunda isles	10,050

## MOUNTAINS OF AFRICA.

### Abyssinia.

Mountains of Geesh, estimated at	15,050
Mountains of Amid-Amid, estimated at	13,200
Lamalmon, estimated at	11,200
Mountains of Gondar	8450
Taranta	7800

### Morocco.

The highest peak of the Atlas chain, estimated at	11,980
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### Colony of the Cape of Good Hope.

Compafs mountain, estimated at	10,000
Newveldt mountains, estimated at	10,000
Kom, estimated height above the Karroo plains	5000
Khamies mountains	4300
Table mountain	3582
Devil's-Head	3315
Lion's-Head	2166

### African Islands.

Peak of Teneriffe, average height	12,236
Gros Morne, Isle of Bourbon, according to de la Caille and Berth	10,883
St. Vincent	9600
Volcano of Bourbon	7680
Monton de Trigo, Canary Isles	7400
Ridge of Entre-deux, isle of Bourbon, between	5120 and 6400
Bonnet Pointu, or mountain of Cimandef, isle of Bourbon	6050
Peak of Ruivo, centre of the island of Madeira	5162
Piter Boot, isle of France	2714
Diana's peak, one of the highest summits in the isle of St. Helena	2692
Corps du Garde mountain, isle of France	2560

## MOUNTAINS OF AMERICA.

### South America

#### Caraccas.

Silla de Caraccas	8432
Tumiriquiri, province of Cumana	6250
Guachano, <i>ibid.</i>	5250
Chain of Venezuela, from	4 to 5000
Mountains of Bergantin	4512

#### New Granada.

Sierra Nevada de Merida	16,420
Sierra Nevada de Santa Martha	15,200

#### New Andalusia.

Volcano of Duida	8467
Cuanarama	6400

#### Quito.

Chimborazo, highest summit of the Andes, and one of the highest on the face of the earth	20,909
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# MOUNTAINS.

	English Feet.
Difca Cafada - - - -	19,570
Cayambé Ourcou - - -	19,392
Volcano of Cotopaxi - - -	18,880
City of Riobamba - - -	18,800
Altar mountain - - - -	17,472
Volcano of Sangai or Mecas - - -	17,152
Volcano of Tonguragua - - -	16,579
Corazon - - - -	15,808
Bayo Pongo - - - -	15,800
Gargaviraco - - - -	15,680
Guancavelica - - - -	14,961
Boueran - - - -	12,652
Cahouapata - - - -	11,641
Borma - - - -	10,329
City of Quito - - - -	9356
Plain of Schangilli - - -	8992
Carraburu - - - -	7846

## La Plata.

Mountain of Potofi, according to Alcedo -	18,000
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## West Indies.

Highest summit of the Blue mountains in Jamaica	7431
Pelee, island of Martinique - - -	5100
Morne Garou, island of St. Vincent's -	5050
Mount Misery, island of St. Christopher -	3711

## North America.

### Mexico.

Volcano of Popocatepee - - - -	16,365
Peak of Fraide - - - -	15,129
Peak of Cofre - - - -	13,275
City of Mexico - - - -	7424
Sierra de Tasco - - - -	4480
Sierra de Chilpantzingo - - - -	3840

### United States.

White mountains in New Hampshire, estimated at about - - - -	7800
Kattskill mountains; supposed height above Hudson's river - - - -	3454
Killington peak, in Vermont - - - -	3454
Highest point of the Apalachian chain in Virginia, about - - - -	2700

### North West Coast of America.

Mount St. Elias, in lat. 60° 27' N. - - -	12,672
Fairweather mountain, lat. 58° 52' N. - - -	8970
Mountain of Crillon, lat. 58° N. - - -	5440
Mount Edgumbe - - - -	1281
The highest of the Stony mountains in the N.W. parts of America are said to be 3500 feet above the adjacent plain, which is estimated at 2700 feet above the level of the sea.	

### Old Greenland.

Blaaferk - - - -	6000
Jamefon's Mineralogy, vol. iii.	

The circumstance of one side of a chain of mountains, or of a single mountain, being in general steeper than the other, has given origin to an instructive paper by Mr. Kirwan, "On the Declivities of Mountains," of which the following is an abstract. The theory, according to which this na-

turalist attempts to explain the phenomenon in question, will constitute part of another article.

That one part of almost every high mountain is steeper than another, could not have escaped the notice of any person who had traversed such mountains; but that nature, in the formation of such declivities, had any regard to different aspects or points of the compass, seems to have been first remarked by the celebrated Swedish geologist, Mr. Tilas, in the 22d volume of the Memoirs of Stockholm for 1760. Neither Vereneus, Ludolph, nor Buffon, in his Natural History, published in 1748, have noticed this remarkable circumstance. The observation of Tilas, however, relates only to the extreme ends, and not to the flanks of the mountains. With respect to the former, he remarked that the *steepest* declivity always faces that part of the country where the land lies highest; and that in the southern and eastern parts of Sweden they consequently face the east and south-east, and in the northern the west. The essential part of this observation extends, therefore, only to the general elevation or depression of the country, and not to the bearing of their declivities.

The discovery, that the different declivities of the flanks of the mountains bear an invariable relation to their different aspects, seems to have been first published by Bergmann, in his Physical Description of the Earth, of which the second edition appeared in 1773. He there remarked, that in mountains that extend from north to south, the western flank is the steepest; and that in mountains which run east and west, the southern declivity is the steepest, and the northern the gentlest. This assertion he grounds on the observation related in his first volume, namely, that in Scandinavia, the Sveoberg mountains that run north and south, separating Sweden from Norway, the western or Norwegian sides are the steepest, and the eastern or Swedish the most moderate; the verticality or steepness of the former being to that of the latter as 40 or 50 to 4 or 2: that the Alps are steeper on their western and southern sides, than on the eastern and northern: that in America the Cordilleras are steeper on the western side, which faces the Pacific ocean, than on the eastern. But he does not notice a few exceptions to this rule in particular cases, which will hereafter be mentioned.

Buffon, in the first volume of his Epoch of Nature, published in 1778, is the next who notices the general prevalence of this phenomenon, as far as relates to the eastern and western sides of the mountains that extend from north to south; but he is silent with respect to the north and south sides of the mountains that run from east to west: nay, he does not seem to have a just comprehension of this phenomenon, for he considers it conjointly with the general dip of the regions in which these mountains exist. Thus he tells us, that in all continents the general declivity, taking it from the summit of mountains, is always more rapid on the western than on the eastern side: thus, the summit of the chain of the Cordilleras is much nearer to the western shore than to the eastern; the chain which divides the whole length of Africa, from the Cape of Good Hope to the mountains of the moon, is nearer, he says, to the western than to the eastern seas. Of this, however, he must have been ignorant, as that tract of country is still unknown. The mountains which run from cape Comorin through the peninsula of India are, he says, much nearer to the sea on the east than on the west: he probably meant the contrary, as the fact is evidently so, and so he states in vol. ii. p. 295. The same, he tells us, may be observed in islands and peninsulas, and in mountains.

This remarkable circumstance of mountains was, notwithstanding,



standing, so little noticed, that, in 1792, the author of an excellent account of the territory of Carlsbad, in Bohemia, tells us, he had made an observation, which he had never met with in any physical description of the earth, namely, that the southern declivity of all mountains was much steeper than the northern, which he proves by instancing the Ertzgebirge of Saxony, the Pyrenees, the mountains of Switzerland, Savoy, Carinthia, Tyrol, Moravia, the Carpathian, and mount Hæmus in Turkey. (2. Bergm. Journ. 1792, p. 385, in the note.) Hermann, in his *Geology*, published in 1787, has at least partially mentioned this circumstance; for he says that the eastern declivities of all mountains are much gentler, and more thickly covered with secondary strata, and to a greater height, than the western flanks, which he instances in the Swedish and Norwegian mountains, the Alps, the Caucasian, the Apennine, and Ouralian mountains; but the declivities bearing a southern or northern aspect he does not mention.

Lamétherie, in vol. iv. of his *Theory of the Earth*, produces numerous instances of the inequality of the eastern and western declivities, but scarcely any of the northern and southern, whose differences he does not seem to have noticed; but he makes the remark, that the coasts of different countries present similar declivities. With regard to eastern and western aspect, he thinks that a different law has obtained in Africa from that which he has observed in other countries; for in that vast peninsula he imagines the eastern declivities of mountains are the steepest, and the western the gentlest. Of this, however, he adduces no other proof but that the greatest rivers are found on the western side. This proof seems insufficient, as, if mountains be situated far inland, great rivers may flow indiscriminately from any side of them; and sometimes few rivers flow even from the side whose descent is most moderate: for instance, from the eastern side of the mountains of Syria. The Elbe and the Oder, two of the greatest rivers in Germany, take their course from the western sides, the first of the Bohemian, and the other of the Moravian mountains, which yet are the steepest. Many originate from lakes, as the Shannon in Ireland. Many take such a winding course, that, from a bare knowledge of the place of their disembogement, it is impossible to judge from what side of a mountain they issue, if from any: their course at most discovers the depression of the general level of the country.

In 1798 the celebrated traveller and circumnavigator, John Reinhold Forster, published a geological tract, which merits so much more attention, as all the facts were either observed by himself, or related to him by the immediate observers. In this he states as a fact universally observed, that the south and south-east sides of almost every mountain are steep, but that the north and north-west sides are gently covered and connected with secondary strata, in which organic remains abound, which he illustrates by various instances.

Having advanced these general remarks, Mr. Kirwan proceeds to state the principal observations relative to this object, that have been made in different parts of the world; viz.

*In Europe:* 1. The mountains that separate Sweden from Norway extend from north to south; their western sides are steep, and the eastern gentle (Bergm. Erdbeschreib. ii. p. 157.) 2. The Carpathian mountains run from east to west; their southern sides towards Hungary are steep, their northern towards Poland moderate. (Forster, § 46.)—3. Dr. Walker observed that the coasts and hills of Scotland are steeper and higher on the western side than on the eastern. (Jamefon's *Mineralogy of Scotland*, p. 3.) However, Jamefon observed that the south side of the isle of Arran is

the lowest, and the north side the highest. (P. 51.) 4. The mountains of Wales are gentle on the eastern, and steep on the western sides. 5. The mountains of Parthery, in the county of Mayo, are steep on the western side. 6. The mountains which separate Saxony from Bohemia descend gently on the Saxon or northern side, but are steep on the Bohemian or southern side. (Charpentier, p. 75.) The southern declivity is to the northern as six to two. (Bergm. Journal, 1792, p. 384.) 7. The mountains which separate Silesia from Bohemia run nearly from east to west, yet are steeper on the northern or Silesian side, than on the opposite Bohemian. (Assemanni *Silesia*, 335.) Such branches as run from north-east to south-west have their western covered with primordial strata, and are consequently less steep. (New Roz. p. 157.) 8. The Meissner, in Hesse, is steeper on the north and east sides, which face the Warra, than on the southern and western. (Bergm. Journ. 1789, p. 272.) 9. The mountains of the Hartz and Habichtswald are steep on the south, and gentle on the northern sides. (Forster, § 46.) 10. The Pyrenees, which run from east to west, are steeper on the southern or Spanish side. (Carbonières, xiii.) 11. The mountains of Crim Tartary are gentle on the northern, and steep on the southern sides. Forster, *ibid.*

*In Asia:* 12. The Ourals, which stretch from north to south, are far steeper on the western than on the southern side. (Hermann *Geol.* p. 90, and *Beschreib. des Ural*, p. 389.) 13. The mountain of Armenia, to the west of the Ourals, is steep on its east and north sides; but gentle on the southern and eastern. (Forster, *ibid.* and Hermann, *ibid.* p. 390, in the note.) 15. So also are the mountains of Caucasus. (Schriften d. Berl. N. F. Gesellsch. iii. p. 471.) 16. The mountains of Kamtschatka are steep on the eastern sides. (Pallas *Act. Petrop.* 1777, p. 43.) 17. The Ghauts, in the Indian peninsula, are steep on the western side. 18. The mountains of Syria, which run from north to south, skirting the Mediterranean, are said to be steeper on the western side, facing the Mediterranean. Delamétherie, iv. p. 380.

*In America:* The Cordilleras run from north to south; their western flank towards the Pacific are steep, their eastern descend gradually. In Guiana there is a chain of mountains that run from east to west; their southern flanks are steep, their northern gentle. Condamine, p. 140. Kirwan in *Trans. Irish Acad.* vol. viii.

Forster and Pallas account for the existence of unequal declivities on the opposite north and south sides, by imagining that a great flood from the southward has given the earth its present form: Mr. Kirwan, on the other hand, in the memoir from which the above observations are extracted, has endeavoured to explain the origin of the inequalities, not only of the northern and southern, but also of the eastern and western declivities, by assuming a twofold violent motion of the waters, by which the earth was originally covered, namely, the one from east to west, the other from north to south: the former of these motions having been resisted by the mountains which stretch from north to south, this opposition must have diminished the impulse of the water, and disposed it to suffer the earthy particles with which it was impregnated to be deposited on the eastern declivities, which rendered them gentle, gradual, and moderate; while the western sides, receiving no such accessions from depositions, must have remained steep and craggy. The course of the waters from north to south was in the same manner resisted by the primeval mountains that run from east to west, which occasioned similar depositions on the northern sides of these mountains, against which these waters impinged, and thus smoothed them. Again, where mountains intersect each other



## MOUNTAINS.

other in an oblique direction, the north-east side of one range being contiguous to the south-west flanks of another range, there the afflux of adventitious particles on the north-east side of the one must have frequently extended to the south-west side of the other; particularly if that afflux were strong and copious. thus the Ertzgebirge of Saxony, which runs from west to east, has its north-east side contiguous to the south-west side of the Riefengebirge, which separates Silesia from Bohemia, and hence these latter are covered with the same beds of gneiss, &c. as the northern sides of the Saxon, and thereby are rendered smooth and gentle, comparatively to the opposite side, which, being sheltered, remains steep and abrupt. It is in this manner that Mr. Kirwan accounts for the above observation, N<sup>o</sup> 7. He also admits, that, from various contingent local causes, such as partial inundations, earthquakes, volcanoes, the erosion of rivers, the elapion of strata, disintegration, the disruption of the lofty mounds by which many lakes were anciently hemmed in, several changes were produced in particular countries, that may at first sight appear exceptions to the operations of the general causes stated by him. Thus the mountains of Kamtschatka had their eastern flanks torn and rendered abrupt by the irruption of the general deluge, probably accompanied by earthquakes; and thus the Meissner had its east and north flanks undermined by the river Warra: thus, too, the eighth and sixteenth of the above cited observations are accounted for, as is the thirteenth, by the vast inundations so frequent in that country (Pallas. i. p. 172.), which undermined or corroded its eastern side, while the western was smoothed by the calcareous depositions from the numerous rivers in its vicinity. Kirwan, loc. cit.

It should not be left unnoticed here that among the observations collected by Mr. Kirwan to support his theory, there are some that appear less correct, such as the tenth, in which the Pyrenees are said to be steeper on the southern or Spanish side; whereas, according to the observations of a late intelligent traveller in those parts, professor Link, the northern flanks of most parts of that group of mountains are far steeper than those on the Spanish side.

More generally correct appears to be the observation made by several geologists, that all considerable chains are found to stretch from north-east to south-west; though, indeed, the Norwegian mountain chain, and that of the Ural, and part of the Cordilleras of the Andes, must be considered as exceptions to this rule. Professor Link endeavours to prove that the present form of the whole of Europe may be satisfactorily accounted for by this direction of the chains of mountains, and the influx of the sea from west to east. See Link's *Geolog. u. Mineral. Bemerkungen auf einer Reise durch das Süd westliche Europa*, 1801.

For a history of the principal mountain chains on the globe, we must refer the reader to the articles *ALPS*, *ALTAIC Mountains*, *CAUCASUS*, *PYRENEES*, *URAL*, &c. as also to Pinkerton's *Geography*, and Wilson's *History of Mountains*. We cannot, however, conclude this article without giving some observations on the mountains of Portugal and Spain, abstracted from the work of professor Link above alluded to, and which have appeared the more worthy of a translation, as they principally relate to a part of Europe which had not before been examined with a view to its orology.

The northernmost part of *Portugal*, the province of *Entre Douro e Minho*, is entirely composed of mountain chains which run nearly parallel to each other, from E.N.E. to W.S.W., deviating only now and then more towards N. and S., particularly in the north-eastern and eastern parts of this

province. The vallies are rather narrow, and widen only towards the sea; perfect plains are not seen in this part of the country. The highest among these chains is that called *Serra de Gerez* (pronounced *Sheréz*); it enters the country at *Montalegre*, and following the course of the *Rio Homem* (principally in the direction from E. to W., inclining at last a little towards S.W.), branches out into the lower ranges of hills towards the *Cavado*: it also sends forth considerable ranges of hills to the southward. Almost all its vallies run in an ascending direction from S. to N., terminating at the ridge which there separates *Portugal* from *Spain*. The most remarkable of these vallies is that called *Caldas da Gerez*, where are warm baths; and on its eastern side we find the most elevated situation of the whole range, viz. the *Muro de Burageiro*. The *Gerez* mountains consist entirely of granite, forming rugged and craggy summits; and in some parts (as in the valley of *Caldas*) the felspar of this rock is decomposed and converted into porcelain earth. There are no where traces of real stratification observed in this granite. At the foot of one of the highest parts of this range, four warm springs issue from out of a granite unquestionably primitive; a circumstance which appears remarkable, as it is generally supposed that the heat of such springs is owing to inflamed beds of coal, which cannot be expected in a situation like this. They are found in several other parts, such as at *Guimaracus*, exactly under the same circumstances. On ascending the mountains that close the valley of *Caldas* at the western side, we arrive at an elevated mountain plain, whose western declivity is covered with a fine granitic sand, which renders it probable that the plain owes its existence to the detritus carried down by the waters. Also detached rocks of quartz are found here, particularly near the village *Coride*; they are of considerable size, snow-white, and produce a beautiful effect. On the northern boundaries of this plain, the *Serra Amarella*, a small range of hills issuing from the *Gerez*, separates *Portugal* from *Spain*. The elevation of the *Gerez* mountain chain is estimated, by professor Link, at 3000 feet. There are frequent traces of metalliferous veins in the S. of this province, and on the banks of the *Douro*. At *Oporto* copper pyrites and malachite are found in the granite.

The mountains of *Traz os Montes* are less granitic, consisting chiefly of slaty sand-stone; their direction is from N.E. to S.W. The highest and most remarkable chain of this province is the *Serra de Marao*, which name it obtains near *Amarante*, although in the same range the mountains extend far to the N.E. The *Marao*, properly speaking, commences about *Mirandella*, proceeding in a south-westerly direction as far as the river *Tamega*. The rounded form of its ridge and summits, and the evenness and uniformity of its flanks, announce, even at a distance, a chain different from that of the *Gerez*. On approaching the *Marao* from the N. side, the traveller passes over a considerable tract of granitic ground. At the village of *Lixe* (*Lixé*) the granite is stratified; but in the neighbourhood of *Amarante* it appears again in craggy rocks. On the summit of the *Marao* the granite becomes fine-grained, passing into slaty sand-stone; this is succeeded by clay-slate, which forms the highest part of the mountain. This clay-slate has the peculiarity of separating, not only into slates, but also into flags. It contains imbedded chert. The elevation of the *Marao* is not inferior to that of the *Gerez*, and of the *Serra de Foia* in *Algarvia*. The *Douro* is accompanied almost through the whole province by a range of hills of less height than the *Marao*; they all consist of a slaty sand-stone passing into clay-slate. It is on these hills that the grape grows which yields the port wine; the steep declivities



## MOUNTAINS.

vities towards the S., with the black colour of the slate, produce very intense heat in the vineyards. These hills also contain chalybeate springs, such as those of Relva, in the parish of Guiaes, at Fermentoes, in the parish of De Passos, &c.

The principal chain in Beira, and indeed in the whole kingdom, is the Serra de Estrella. It sends forth two rivers in two different directions, *viz.* the Zézere to the southward, and the Mondego towards the N. and E. It stretches from N.N.E. to S.S.W., commencing at Alorico, and extending to some leagues towards the S. of St. Romão. On the N. side the mountains rise very gradually, whence it is called Serra Manfa; but the S. side has obtained the name of Serra Brava, the wild or bold mountain chain, on account of the craggy rocks and steep precipices by which it is terminated there, and which afford a most beautiful view on that side. The highest summit, called Malhao da Serra, is on the southern extremity. The Estrella is unquestionably the termination of the chain which separates New from Old Castile. The opposite Sierra de Gata is evidently connected with it by means of ranges of lower hills. Nor is there any material difference in the nature and appearance of these chains; for the Estrella, like the Castile mountains, consists of granite, and, like them, has a gradual acclivity on the N. and W. sides, and is steep on the S. side; whereas, the northern mountain chains of Spain and Portugal are either equally steep on both sides, or show steeper acclivities on their northern flanks. Some distinct ranges, being continuations of the Estrella, are seen to proceed to the southward, towards the Tagus. These ranges of hills often exhibit common sand-stone without mica, covering the flaty sand-stone. There are several ranges of mountains in the vicinity of Coimbra; for to it extend the S.W. branches or continuations of the Estrella, as also some of its subordinate ranges, to which may be referred the Serra di Buçaco; and a branch of the southern calcareous chain likewise extends to this part of Beira; the others are composed of flaty sand-stone and slate-clay. The mountains on the coast, from the Mondego to the banks of the Vonga, are calcareous, like those of Coimbra, but remarkable on account of the slate-clay and flaty sand-stone, alternating with a bed of coal (or rather brown coal) of upwards of four feet in thickness. Along the whole coast of Figueira, as far as above the Cape, traces of coal are observed, as also at the Cape Espichel, of which more will be said hereafter.

The central part of Estramadura is occupied by a high chain of calcareous mountains, which principally stretches from N.N.E. to S.S.W., but sends out branches at its two extremities, which unite with other mountain chains. At Condeixa, two leagues from Coimbra, it gives out several subordinate branches, which proceed beyond the Mondego to Coimbra, where they form the coast above Buarcos. From Condeixa it runs to the southward of Pombal, from thence to the eastward of Leiria and Porto de Moz, along Alcobaca, and from here to the eastward of Obidos and Torres Vedras, where it joins the range of Monte Junto. A very considerable secondary range at its eastern side is that of Loufao, to the S.E. of Coimbra, and still in the province of Beira: it is elevated enough to be in winter covered with snow, which is carried to Lisbon. All these ranges of hills are very closely grouped. The Monte Junto, which is more striking than the rest, on account of its superior height, appears, however, to be only part of the principal range. The lime-stone of these hills rests on sand-stone. At Rio Mayor, on the eastern declivity of this range of calcareous hills, salt-springs are found. The lime-stone of which the high central range is composed is of a

very compact texture, and commonly of a smoke-grey colour, though in some places it constitutes very fine white, or black marbles, susceptible of a good polish; the black variety of Porto de Moz and Leiria is of superior quality. Petrifications are seldom seen in this lime-stone. All these calcareous mountains of the principal chain are steep, and covered with small stones, from out of which some large rock is here and there seen to project. The sides and tops are rounded and covered with low underwood; their appearance is barren and dreary, while the lower secondary ranges are diversified by fine green shrubs, and display a luxurious vegetation. On the western side of the principal range, the sand-stone and lime-stone hills alternate, in the same manner as on the eastern side. Near Torres Vedras, and other places, beds of coal have been found. Two leagues from Obidos are the celebrated warm baths, Caldas da Raynha. On the eastern side of the calcareous chain, the plain of Golegao and Santarem separates the mountains belonging to the Upper Tagus, and to the chain just described. The granitic mountains of Cintra constitute a lofty and rugged chain, which has been called a branch of the Estrella; but it may rather be looked upon as a protuberance of the above described distant granitic chain, which here again emerges from the earth: craggy rocks, steep forked summits, innumerable rivulets and their sources, and the woody acclivity on the north side, contribute to make these mountains one of the most romantic summer residences for the richer inhabitants of Lisbon. The whole range from Cintra, to Cabo de Rocca, has only two leguas in length; it is rather steep towards the N.E., but its descent is gradual towards the cape, where it terminates in a precipice, which is only from 50 to 80 feet above the level of the sea. The flanks of these mountains are covered with other rock-stones, of which compact lime-stone is the more common. The hills about Lisbon are principally composed of lime-stone, especially on the east side of the city; they run along the banks of the river as far as Villa Franca, where the country becomes less hilly, and from hence small hills of sand-stone, or only sand, continue as far as Santarem. To the N. and W. of Lisbon, calcareous hills alternate with basaltic hills; but the basaltic range, properly speaking, only begins at Belem, on the banks of the Tagus, and extends over three leguas, as far as Bellas and Cabeça di Montachique. The whole tract, however, does not consist of basalt; it only forms insulated hillocks among those of lime-stone. There is no other place on the whole north side of the Tagus, which presents that rock; nor is it any where seen to exhibit columnar or other separations, as is the case with the basalt of many other countries. On the banks of the river, the lime-stone overlays the basalt in horizontal strata.

The elevated district of Alentejo stretches in general from N.N.E. to S.S.W., dividing the rivers of this province into two ranges, one of which takes its course towards the Guadiana, and the other towards the Tagus, and the western coast. We see here no chain, but a great number of small interrupted ranges of mountains, which generally run from N. to S., with a slight deviation to the westward. If we begin the survey of the elevated ground of this province with the plain of Badajoz, which extends to the westward as far as the hills on which is situated the fortress of Elvas, we find at this latter place granitic rocks, which generally form the base of those hills, while the tops are covered by granular lime-stone; on the whole in the same manner as in the mountains of Cintra, except that in these latter the granite projects over the lime-stone. The small hills from the Venda to near Estremoz consist of a flaty sand-stone, which passes into slate-clay; the strata are often vertical.



## MOUNTAINS.

At Estremoz the hills become more elevated; they are covered with black granular lime-stone, which may pass for one of the finest marbles in the kingdom. From the Venda to Montemor ó Novo, slaty sand-stone and granite are found to alternate. The neighbourhood of Montemor is entirely granitic. From here to the westward the hills decrease rapidly in height, and are lost in the great sand plain of Alentejo. To the northward of Montemor, the high land of Alentejo extends as far as Portalegre and the Tagus: granite is still alternating with slaty sand-stone. To the southward the granitic ground extends to Evora, Vidigueira, and Beja, and from thence uninterruptedly to Serpa, on the opposite side of the Guadiana; the whole of this tract forming a very fertile elevated plain with low hills. Beyond the Guadiana a range of low hills commences, consisting of slaty sand-stone, and forming the most dreary and barren tract of country in the whole kingdom; they run from N.E. to S.W., and are in fact only continuations of subordinate chains of the Sierra Morena in Spain. The Serra da Arrabida, which rises precipitously from a sandy plain, stretches from E.N.E. to W.S.W. towards the sea. It forms the southern cape at the mouth of the Tagus, or the Cabo de Espichel; where, to the southward, the mountains rise almost perpendicularly above the sea. This chain begins to the northward by a range of low hills at Aldea dos Mouros, which accompanies the main chain as far as Calheriz; to the eastward it begins with a rounded almost conical mountain, on which the monastery of Palmella is situated: it suddenly rises to a considerable height (about 1500 feet), its sides are steep and its ridge is narrow. The highest point of the chain is between Azeytao and Aldea dos Mouros, and the sea; towards Cezimbra, and lastly, towards the Cabo de Espichel, it falls off considerably, (but not so much as the Cintra chain does near the Cabo de Rocca,) and terminates as a precipice which overhangs the sea. The foot of this chain consists at its northern side of a kind of old sand-stone, which alternates with strata of a red-brown clay, which also traverses the former in various directions; this is succeeded up to the summit by compact lime-stone, with some few petrifications, which in some places forms beautiful varieties of marble. Near Calheritz and Cezimbra, where the chain begins to fall off in height, brown coal has been found.

Parallel with the Serra da Arrabida, an insulated, not very elevated chain, stretches towards the sea, viz. the Serra de Grandola: it forms two ranges, proceeding together from the southward of Grandola, both of which consist entirely of a close clayey sand-stone, which is here and there schistose and micaceous. This chain, which in some maps is designated by the name of Serra Minas de Cobre, has considerable veins of copper ore, but they are not wrought, owing to the scarcity of wood in these parts. It is connected, by single ranges of hills, with the mountains of Campo de Orique, and the Algarvian mountains.

The chain of mountains which separates Algarve from Alentejo, begins to the northward of Cape St. Vincent, near to the coast; at first it constitutes the elevated Serra de Monchique; then, again falling, it forms de Serra de Caldeirao; and, lastly, it terminates in the mountains on the banks of the Guadiana near Mertola. On the northern side it has a great number of subordinate ranges, and these consist of granite and sand-stone; on the south side it is accompanied, from Cape St. Vincent to near the Guadiana, by a chain of calcareous mountains. The Serra de Monchique appears to be of the same height as the Gerez and the Marao. On its northern side a range of mountains, composed of sand-stone, runs parallel to it. The highest part of the chain of Monchique is called Serra de Foja; it is a

granitic ridge, emerging from out of the sand-stone mountains, which surround it on all sides. On the south side of Serra de Foja, near to its summit, is situated, in the midst of orange and chestnut groves, the romantic village of Monchique. On the steep woody side of the mountain, near this place, and to the southward, are the warm springs which issue from among granitic rocks, similar to those in the Gerez mountains. The chain of Algarve is covered on all sides by mountains of slaty sand-stone, which nearly ascends to its summit. The range of sand-stone mountains falls off to the eastward, but again rises at the Serra de Caldeirao. The highest point of this chain is between Faro and Os Padroes in Alentejo. Towards Tavira and Castro Marim these mountains approach the sea, and to the eastward of them commence the mountains that run along the Rio Deleyte, and those of Mertola. This whole eastern part of the chain, from Castro Marim to Mertola, consists of a clayey massive sand-stone, not unlike the grauwacke of the Hartz. Cape St. Vincent, which is elevated from fifty to eighty feet above the level of the sea, is formed by part of a range of calcareous hills, which proceeds from the principal chain: the same hills run along the sea to the eastward as far as Castro Marim. Near Cape St. Vincent large masses of basalt are seen dispersed on the calcareous hills.

The very regular form of *Spain* is in a great measure determined by two mountain chains, which may be considered as branches of the Pyrenees; one stretching from Guipuscoa and Navarra to Cape Ortegal, another from Catalonia to Murcia. Several other chains traverse the middle and the southern part of the country from E. to W. in nearly a parallel direction: the principal of them are the chain in South Galicia, the Castilian mountains, extending as far as the Sierra de Gata and de Eltrella in Portugal, the mountains near the Tagus, the Sierra Morena, and the Alpujarra. From these issue a great number of lateral and more subordinate chains, and among them are seen single elevated plains or terraces, such as those of Alava, Old Castile, and part of Leon, Arragon, New Castile, and La Mancha.

The mountain chain which passes into Biscay may be considered as a continuation, or a branch, of the Pyrenees. The more elevated groups begin at that part where France is separated from Spain by the Bidassoa: they at first run to the northward, but soon take a more westerly direction, till at last they stretch exactly from E. to W. Compact lime-stone is the rock of which the mountains of Guipuscoa are chiefly composed. They are rounded off, and are never seen to form acute ridges. On the boundaries of Guipuscoa and Alava, to the southward of the village Salinas de Lecy, a higher chain runs almost in a straight line from E. to W. The direction of the rivers and brooks of this chain indicates this to be the most elevated part of the province. On the foot of these mountains sand-stone appears for the first time. The mountain chain of Guipuscoa extends to the W. and N.W. through Biscay to the Asturias; and it also appears to traverse the northern part of Galicia, and to form Cape Ortegal. On the northern sides of Salinas de Lecy the ascent is steep; the southern side is much less so, and runs out into the elevated plain or terrace of Vittoria. The principal rock in these mountains is compact lime-stone, resting on slaty lime-stone and clay-slate. The plain of Alava, which is still considerably elevated, may be called the first terrace of the Pyrenees; the second terrace is the plain of Old Castile, which extends as far as Leon, and is separated from the former by a range of calcareous mountains which here accompany the Ebro, and may be considered as the fore-runners of the chain of Biscay: they are craggy  
and



and steep, and at Pancorvo they have a considerable height.

In Galicia, to the northward of the Douro, and near the boundaries of Portugal, a chain commences, which runs in a parallel direction with the Gerez mountains, and to which belong the mountains of Monterey where tin is found.

The high mountain chain which separates Old from New Castile is one of the most considerable in Spain: it may be looked upon as a series of interrupted smaller chains, which, running between Old and New Castile, form here the Puerto de Guadarrama; farther to the S.W. the Sierra del Pico; still farther, de Montana de Griegos; and, lastly, the Sierra de Gata, and the Serra de Estrella. The interior and the highest ridge of this chain (which cannot, with propriety, be called a branch of the Pyrenees,) consists entirely of granite, which, at the foot, is overlaid by masses of micaceous sand-stone approaching to mica slate. The granite of the summit is broken and craggy, forming wild and grotesque groups. The Puerto de Somosierra has still a rounded shape; but the less elevated mountains towards Madrid, the Pico de Miel, &c. present jagged and steep summits. The flanks of the Guadarrama are extremely dilacerated and rocky; and the Sierra del Pico probably derives its name from its pointed summit. In several parts this chain rises from the plain of New Castile with a steep ascent; this is the case with the Guadarrama, but still more strikingly with the Montana de Griegos. From the considerable cold on the highest summit, and the almost perpetual snow, in a latitude like this, we may infer that its elevation is about 8000 feet above the level of the sea. This chain appears to be rich in minerals, but has not yet been scientifically examined in this respect. The smaller mountains contiguous to the base of this chain consist, on the New Castile side, of a solid sand-stone, separated into mountain masses; lower down slaty micaceous sand-stone is found; and, lastly, common sand-stone, overlaid by compact lime-stone: the latter, however, are often wanting, when the granite is seen to rise from the plain.

The plain of New Castile may likewise be denominated a terrace, or elevated plain, though it is less so than that on the Old Castile side of the chain. This terrace continues to eastward, as far as the ranges of mountains between the Ebro and Tagus, where, at first, it extends along both sides of the latter river, but lastly only on its northern side, as far as Placentia and Coria: it is, for the most part, covered with sand and rolled stones, but also diversified with ranges of hills composed of clay, with gypsum, lime-stone, and other fossils. The rolled stones of this plain consist chiefly of that fine granitic mixture of quartz, some felspar, and much brass-coloured mica, known under the name of *avanturino*. In the neighbourhood of Talavera also, porphyry-slate, mica-slate, &c. are found among these as rolled stones. In the neighbourhood of Madrid, Aranjuez, and, indeed, in the whole northern part of New Castile, the hills consist of gypsum; those of the central part are composed of clay, which is generally mixed with sand and pebbles. Towards the banks of the Tagus they are of a coarse-grained old sand-stone; and these are immediately succeeded by granitic hills.

Nearly in a parallel direction with the Castilian mountains run the ranges of mountains which accompany the Tagus, and traverse the elevated country between this river and the Guadiana. With regard to length, these ranges are inferior to those of the last-mentioned chain; but they are an assemblage of several chains, which stretch parallel to each other. They do not attain the height of the Guadarrama, the Sierra del Pico, the Montana de Griegos; yet the ele-

vation of the Sierra de Guadalupe is not inconsiderable. This mountainous tract has on its eastern and southern sides the elevated plain or terrace of La Mancha; on the south-west it terminates in the plain on the Guadiana. Parallel with it runs the Sierra Morena, with its continuations, the chains which traverse Cordova and Seville, and which join the Portuguese mountains near the banks of the Guadiana. These mountains are not very elevated, but rich in ores: they are principally composed of granite, as are the Montanas de Toledo, the Sierra de Guadalupe, and the ridge between the Tagus and the Guadiana. Near the Tagus, the granite hills give way to others composed of slaty micaceous sand-stone. Between Almaraz and Truxillo, beds of phosphate of lime have been found in this slaty sand-stone, and also in massive quartz. The country about Truxillo consists of a granitic plain: the town itself is surrounded by considerable rocks, which on this spot, otherwise open and flat, has a singular and striking appearance. On these granitic plains are also situated the craggy granite mountains of S. Cruz. The Guadiana at Merida has a granitic bed; on the side opposite to this place the last granitic hill is seen, when, at the place where the river enters Portugal, the plain of the Guadiana succeeds, which is covered with clay and sand. The low hills, farther up the Guadiana, consist, in the vicinity of Meajadas, of slaty sand-stone; and farther down, at the village S. Pedro, of old red sand-stone.

The chains of Catalonia and Valencia appear to be continuations of the Pyrenees; but the Alpujarra in Granada and the Sierra Morena should be kept distinct from them, for they belong to that series of mountains which runs in a parallel direction with the Castilian mountains. The mountains of Valencia, and those of Catalonia which join them, consist, according to Cavanilles, of lime-stone, generally containing petrifications. Catalonia appears to be very rich in rock stones, and it is the only province of Spain in which basalt is found; at least, a basaltic column, in the museum of Madrid, is marked as coming from Catalonia. The principal rock-stone of the Sierra Morena, according to the specimens seen by professor Link, is a slaty sand-stone. The Alpujarra in Granada is said chiefly to consist of lime-stone.

MOUNTAINS, *Attraction of*. See ATTRACTION.

MOUNTAINS, *Burning*. See VOLCANO.

MOUNTAIN-*Masses*. This word, in the Wernerian system of geognosy, denotes a modification of structure observable in the rock formations that compose the crust of the earth, but demonstrable only in considerable masses, or whole mountains. To this structure belongs *stratification* (see STRATA,) and what is called the *seamed structure*, on account of the lines that indicate the distinct concretions, running parallel in one direction, but intersecting each other in another direction, and thus conveying the idea of seams. A striking example of this latter structure is the *columnar*. The columns are sometimes regular, sometimes approach to the globular form, and occur even curved. They are from a few inches to many fathoms long. The islands of Staffa and Eigg present admirable examples of it, in those basaltic columns which are sometimes collected into groups; and such groups are often separated from each other by rents, which render them more distinct. These groups may be considered as immense distinct concretions: the columns of which they are composed often tend towards a centre; others are parallel, or perpendicular; some are horizontal; and all these varieties sometimes occur in the same hill. Sometimes they are jointed, so that the convex extremity of the one column is fitted to the concave extremity of the other; and these columns are usually composed of globular distinct



distinct concretions. The globular concretions are composed of curved lamellar concretions: the spaces between the different globular concretions are composed of a looser matter than the concretions themselves; and it is by the falling out of this less compact substance that the structure of such columns is first developed. No rock shews this kind of structure more distinctly than basalt: in it we have all the varieties of the feamed structure, from the smallest, which is the lamellar distinct concretion, to the largest, which is formed by the grouping of columns. This kind of structure occurs also in porphyry and green-stone. Lava never presents any of the varieties of the feamed structure; a negative character, which sufficiently distinguishes it from green-stone or basalt, with which it has been confounded.

Another kind of feamed structure, which deserves to be described, is the *tabular* feamed structure. It is distinguished from the *lamellar*, by being always straight and much thicker: it is generally from three to nine feet in length, and rarely thicker than two or three inches. Basalt, in the lower parts of an individual deposition, has often this kind of structure. At first sight, it is not unlike stratification. It also occurs in columnar porphyry.

The last kind of feamed structure is the *large globular*, or massive, in which all the dimensions are nearly alike. It occurs alone, that is, without any other kind of structure, and is from one to three or more fathoms in diameter. The larger balls shew lamellar distinct concretions, which are always more solid the nearer they approach the centre. The roundish balls of granite, found dispersed over low countries, have been considered as boulders or rolled stones; and many theories have been formed to account for their transportation. The granite of Arran presents this kind of structure. Jameson's System of Mineralogy, vol. iii.

MOUNTAIN *Ash*, in *Gardening*. See SORBUS.

MOUNTAIN *Blue*. See COPPER.

MOUNTAIN, *Cock of the*, *Urogallus*, in *Ornithology*. See GROUSE and TETRAO *Urogallus*.

MOUNTAIN *Cork* }  
MOUNTAIN *Flax* } See ASBESTUS.

MOUNTAIN *Green*. See COPPER.

MOUNTAIN-*Heath*, the name by which some call the saxifrage of botanical writers.

MOUNTAIN *Indians*, in *Geography*, Indians of North America. N. lat. 65°. W. long. 127° to 130°.

MOUNTAIN *Land*, in *Agriculture*, a term applied to such land as lies on sides of hills, and which is often of a poor barren nature.

MOUNTAIN *Milk*. See ROCK-MILK.

MOUNTAINS in the *Moon*. See MOON.

MOUNTAIN *Spring Bay*, in *Geography*, a bay on the north coast of Jamaica. N. lat. 18° 31'. W. long. 77° 29'.

MOUNTAIN *Torrents*, in *Agriculture*, such runs of water as discharge themselves suddenly from the more elevated tops and sides of mountain lands. These torrents may often be converted to an useful purpose, in watering the grounds that lie below, or on the sides of them.

MOUNTEBANKS, derived from the Italian *montare in banco*, are quack doctors or jugglers, who vend their boasted medicines, and exhibit their tricks on a public stage. See NUSANCE.

MOUNTED, in *Sea Language*, the state of being armed or equipped with a certain number of cannon; expressed of a vessel of war.

MOUNTING the *Guard*, *Trenches*, *Breach*, &c. denotes the going upon duty, being upon guard in the trenches, running to the breach, &c.

MOUNTING a *Cannon*, *Mortar*, &c. is the setting it on its carriage, or the raising its mouth.

MOUNTING, in the *Manufactories*, something that serves to raise or set off a work. Thus the frame or border, and its dependencies, make the mounting of a looking-glass: the fust, or butt, the mounting of a musquet, carbine, &c. and the hilt, &c. the mounting of a sword.

MOUNTING of a *Fan*, the sticks which serve to open and shut it, whether they be of wood, ivory, tortoise-shell, whalebone, Indian-cane, or the like. See FAN.

MOUNTMELLICK, in *Geography*, a post-town of Ireland, in the northern part of the Queen's county. The woollen business is carried on in it. It is 42 miles W.S.W. from Dublin, and nearly six N. from Maryborough.

MOUNTNUGENT, a small post-town of Ireland, in the county of Cavan; 46 miles N.W. from Dublin.

MOUNTRATH, a post-town of Ireland, in the Queen's county. It is also called Moynrath, a name which implies the Fort in the bog. The wool-combing business formerly flourished here, but has much declined. Forges and furnaces for iron have been long established here, but from scarcity of charcoal, they are not often used; which is to be regretted, as there is an extensive bank of excellent iron ore. Mountrath is a good market-town, 47 miles S.W. from Dublin, and 6½ miles beyond Maryborough on the road to Limerick. Beaufort.

MOUNTSHANNON, a small town of Ireland, in the south-eastern corner of the county of Galway, and on the river Shannon, opposite to the island of Innis Calthra. It is about 8 miles N. by W. from Killaloe, and 105 miles W. by S. from Dublin.

MOUNTSORRELL, or MOUNT-SOAR-HILL, a small market-town in the hundred of West Goscote, Leicestershire, England, is situated, as its name imports, on an eminence near the banks of the Soar, on the great turnpike-road from Leicester to Derby, at the distance of seven miles from the former, and 104 from London. On the western side is the termination of a ridge of high hills, which extend through Charnwood forest into Derbyshire. The highest point, almost overhanging the town, is called Cattle-hill, where was formerly a fortress, which is mentioned as early as the reign of king Stephen, and was of distinguished note in the contentions between the barons and the crown, in the time of king John and Henry III.: in the latter reign it was razed to the ground, and has never been re-edified. The town is partly in the parish of Barrow-upon-Soar, and partly in that of Rothley: and the vicars and proprietors of each are allotted their proportionate share of lands and tythes by an act of parliament which passed in the year 1781. Mountsorrell-hill is a rock of reddish granite, with pieces of which the streets are paved. They are commonly called Charley-forest stones, and in many places stand out bare, and are of such hardness, after being exposed to the air, as to resist all tools. Such pieces as can be got from under the ground are broken with a sledge, and used in buildings in the shape in which they are broken. Many houses are built with them, and make a very singular appearance. They are often imperfect cones; and being too hard to be cut or broken, the smoothest face is laid outermost, in beds of excellent lime. These stones, from their uncommon hardness, are often used for painters' mallets. At the end of Barn-lane, which separates the parishes of Rothley and Barrow, formerly stood a curious cross, which consisted of a slender, octagonal shaft, fluted, and ornamented within the flutes with carved heads, quartefoils, &c.; the upper part of the shaft was terminated by a crocketed pediment and niches, supported by angels. This relic of monastic



monastic antiquity was taken down in 1793, and removed into the grounds of sir John Danvers, who caused a small market-house, in imitation of a pavilion, to be erected in its stead. In this town were formerly two chapels; but it now has only one, which is subordinate to the church of Barrow. Here are also three meeting-houses for Presbyterians, Baptists, and Methodists. The population, in the year 1801, was returned to parliament as 1233; the number of houses as 231. A weekly market is held on Monday, which, with an annual fair, were first granted, in 1292, by Edward I. to Nicholas de Seagrave and his heirs. Beauties of England and Wales, vol. ix: from Nichols's History and Antiquities of Leicestershire, 7 vols. folio.

MOUR, a town of Nubia, so called from a spring of bitter water; 180 miles W. of Syene.—Also, a town of Hindoostan, in Dowlatabad; 10 miles W. of Beder.—Also, a town of Hindoostan, in Oude; 6 miles S.S.E. of Manickpour.

MOURA, a town of Portugal, in Alentejo; containing two parish churches, an hospital, several convents, and about 4000 inhabitants; 82 miles E.S.E. of Lisbon. N. lat.  $38^{\circ} 7'$ . W. long.  $7^{\circ} 21'$ .—Also, a town of Africa, on the Gold coast; 5 miles N.E. of Cape Coast castle.

MOURAILLE, in *Farriery*. See BARNACLES.

MOURAO, in *Geography*, a town of Portugal, in the province of Alentejo, on the Guadiana, defended by a castle, and containing about 1400 inhabitants; 90 miles E.S.E. of Lisbon. N. lat.  $58^{\circ} 20'$ . W. long.  $7^{\circ} 8'$ .

MOURERA, in *Botany*, Aubl. Guian. 582. t. 233. See LACIS.

MOURET, JOHN JOSEPH, in *Biography*, chamber musician to Louis XIV., superintendant of the duchess du Maine's band, and director of the Concert Spirituel, was born at Avignon in 1682, where his father, a silk merchant, gave him a good education, and cherishing his natural passion for music, spared no expence in facilitating the means of his making a great progress in the art.

He came to Paris in 1707, and had soon admission into the best houses. His figure excited prejudices in his favour, his countenance was gay and cheerful, his conversation lively and agreeable; and his voice in singing fine for a composer made him sought and caressed every where.

The duchess of Maine confided to him the conduct of her magnificent festivals, known by the name of "Les nuits de Sceaux." Soon after, he married Mademoiselle Prone de S. Mars, daughter of the duke of Maine's silversmith, by whom he had one only daughter. The many misfortunes which he suffered two years before his death, occasioned him such mortification as brought him to the grave, after having so deranged his intellects, that his friends were obliged to have him confined at the Fathers de la Charité at Charenton, where he died in the year 1738, in the 56th year of his age.

Mouret was not an able composer; but he had a good taste, which supplied him with agreeable melodies. He furnished the opera, as one of the successors of Lulli, with six serious operas, published many cantatas and single songs, three books of serious airs and bacchanalian songs, many entertainments for the comedie Française and the comic opera, a set of sonatas for two flutes, a book of military pieces, and music expressly composed for many festivals at Sceaux, &c.

MOURGUES, MICHAEL, a French mathematician, was born in the province of Auvergne about the year 1643. He became a professor of rhetoric and mathematics in different houses belonging to his order, and was at length appointed to the chair of professor-royal at Vol. XXIV.

the university of Toulouse. He died, in 1713, a sacrifice to his exertions in the cause of humanity and religion, during the dreadful pestilential disorder which then raged at Toulouse. To very profound as well as extensive erudition, he united the most polished and amiable manners, and the most ardent piety, which made him zealous in his attempts to reform the age in which he lived. He was a considerable writer; his most celebrated pieces are, "New Elements of Geometry, comprised in less than fifty Propositions:" this work has never come into our hands, but we are sceptical as to the value of a work of this kind being contained in so small a space: "A Parallel between Christian Morality and that of the Ancient Philosophers:" "An Explanation of the Theology of the Pythagoreans, and of the other learned Sects in Greece, for the Purpose of illustrating the Writings of the Christian Fathers:" and "A Treatise on French Poetry." Moreri.

MOURI, in *Geography*, a town of Africa, in Fouta. N. lat.  $10^{\circ} 43'$ . W. long.  $11^{\circ} 5'$ .

MOURIRIA, in *Botany*, Jussl. 320. (Mouriri; Aubl. Guian. 452. t. 180.) See PETALOMA.

MOURMIRON, in *Geography*, a town of France, in the department of the Vaucluse, and chief place of a canton, in the district of Carpentras; 17 miles N.E. of Avignon. The place contains 1586, and the canton 8266 inhabitants, on a territory of 280 kilometres, in 10 communes.

MOURNE, a barony of the county of Down, Ireland, which is almost covered with a large mass of very high mountains, generally called the Mourne Mountains, of which Sliebh-Donard is the chief. These are primitive mountains, consisting chiefly of granite. The town of Newry is situated at the base of them.

MOURNE, a river of Ireland, proceeding from a lake of the same name in the county of Donegal, which passing into the county of Tyrone receives the waters of the Derg, and below Strabane runs into the Foyle.

MOURNING, a particular dress or habit, worn to signify grief, on some melancholy occasion.

The modes of mourning are various in various countries; as also are the colours that obtain for that end. In Europe, the ordinary colour for mourning is black; in China, it is white; in Turkey, blue or violet; in Egypt, yellow; in Ethiopia, brown. The ancient Spartan and Roman ladies mourned in white: and the same colour obtained formerly in Castile, on the death of their princes. Herrera observes, that the last time it was used was in 1498, at the death of prince John. Kings and cardinals always mourn in purple.

Each people pretend to have their reasons for the particular colour of their mourning: white is supposed to denote purity; yellow, that death is the end of human hopes, as leaves when they fall, and flowers when they fade, become yellow; brown denotes the earth, whither the dead return; black, the privation of life, as being the privation of light; blue expresses the happiness which it is hoped the deceased enjoy; and purple or violet, sorrow on the one side, and hope on the other, as being a mixture of black and blue.

Mourning, among the ancients, was expressed various ways, as by tearing their clothes, by wearing sackcloth, laying aside crowns and every other mark of joy. Plutarch, in his Life of Cato, relates, that from the time of his leaving the city with Pompey, he neither shaved his head, nor, as usual, wore the crown or garland. Sometimes public grief was testified by a general fast. See FAST.

Among the Romans a year of mourning was ordained, by law, for women who lost their husbands.



In public mournings at Rome, the shops were shut up, the women laid aside all their ornaments, the senators their laticlavian robes, and the consuls sat in a lower seat than usual.

The ancients had a remarkable way of mourning for soldiers slain in battle. The whole army attended the funeral solemnities, with their arms reversed, it being customary for mourners, in most of their actions, to behave themselves in a manner contrary to what was usual at other times. In those places where it was the fashion to wear long hair, mourners were shaved; and where others shaved, mourners wore long hair. The conjecture of those, therefore, is frivolous, who imagine that the soldiers turned the heads of their shields downwards, lest the gods, whose images were engraved upon them, should be polluted with the sight of a corpse; since not the gods only, but any other figures, were frequently represented on shields; nor did the few only near the corpse, but the whole company held their shields in the same position: not to mention that other arms were also pointed downwards. Potter, *Archæol. Græc. tom. ii. p. 103.*

The mournings of the Eastern nations of Indians are much more closely followed, though of much shorter duration than ours. After the death of a near relation, they mourn fifteen days, during which time they eat nothing but rice and water: they are not to chew betel, or to use the common washings in this time; but they are to do acts of charity, such as distributing food to the poor; and prayers are said, entreating the Almighty to forgive the sins of the dead person, and assign him a good place in the other world. On the sixteenth day, that is, the day after the finishing of the time of mourning, they make a solemn feast according to their abilities, and invite to it all their friends and neighbours. After this, they annually, on this day, give food to the poor, and renew their prayers for the happiness of the dead person. Phil. Transf. N° 243.

MOUROU, in *Geography*, a mountain of Thibet. N. lat. 30° 20'. E. long. 83° 14'.

MOUROCOA, in *Botany*, Aubl. Guian. 141. t. 54. Juss. 133. Lamarck Illustr. t. 103; a climbing shrub of the natural order of *Convolvuli*, found by Aublet in the extensive forests of Guiana, where it ascends to the summits of the loftiest trees. *Leaves* alternate, stalked, elliptical, entire, firm, smooth, six inches long and three broad. *Flowers* in axillary tufts, large. *Calyx* in five deep rounded segments, two of them concealing the rest, violet-coloured, permanent. *Corolla* blue, monopetalous, with a short funnel-shaped tube, and broad limb, in five deep rounded segments. *Stamens* five, inserted into the tube, shorter than the limb, and opposite to each of its lobes; *anthers* incumbent. *Germen* superior, conical, violet-coloured like the *style*, which is thread-shaped, with a *stigma* of two rounded flat lobes. *Capsule* oval, pointed, with a fibrous coat, of two cells, one of the three which exist in the germen being abortive. *Seeds* solitary, reddish, polished, long, convex on the outside, flat on the inner.

This plant is perhaps justly referred to *Convolvulus* by Willdenow. See *CONVOLVULUS Macrospemus*, n. 91. Willd. n. 62. Sp. Pl. v. 1. 860.

MOUROU-CONGHE, in *Geography*, a town of Thibet; 76 miles E.N.E. of Lassa.

MOURTEAH, a town of Kemaon; 25 miles E.S.E. of Kerigar.

MOURZOUK, a city of Africa, and capital of the kingdom of Fezzan, is situated on the banks of a small river, and is also supplied with water from a multitude of springs and wells. It is surrounded by a high wall, which

not only serves to defend it, but enables the government to collect, at its three gates, a tax on all goods (provisions excepted) that are brought for the supply of its inhabitants. Being formerly built with stone, it still retains the appellation of a Christian town; but the medley which it presents to the eye of the vast ruins of ancient buildings, and of the humble cottages of earth and sand, that form the dwellings of its present Arab inhabitants, is singularly grotesque and strange. Its distance from Mesurata, which borders on the west, and with respect to which its situation is nearly south, is about 262 miles. N. lat. 27° 20'. E. long. 15° 35'.

MOUSA, a small island among the Shetlands. N. lat. 60° 24'. W. long. 1° 20'.

MOUSANAGUR, a town of Hindoostan, in Oude; 18 miles W.N.W. of Corah.

MOUSAR, a town of Persia, in Laristan; 48 miles N.W. of Lar.

MOUSE, Mus, in *Zoology*. See Mus.

MOUSE, *Dor.* See MYOXUS and SCIURUS *Striatus*.

MOUSE, *Sable*, called also *lemmer*, or *lemming*, the name of an animal found in Lapland, and in other cold countries: many extraordinary things are related of the manner of living of these creatures. See Mus *Lemmus*.

They are of the bigness of a squirrel, and their skin is streaked with brown and black; there are also some spots beside the streaks; the black is a very fine deep colour, the brown is pale; they have two very sharp teeth above, and two below of the same kind: their feet are like a squirrel's; they are usually very fat and fleshy, and are so quarrelsome and fierce, that if a stick be held out to them, they will bite at it, and will hold it so fast, that they may be tossed and swung about in the air by it, without letting it go. In their march they usually keep a direct line from north-east to south-west, and always travel in thousands in the same troop. The whole number forms a square body, and they march only from the time of the twilight till the morning, lying still all the day.

They march in lines, which are some ells distant, but always exactly parallel to each other, so that the places they have gone over look like the furrows of a ploughed field. If they meet with any thing in their way that might deter another animal, it never stops them; but though it be a fire, a deep well, a pond, a torrent, or a bog, they, without hesitation, venture through, and by that means many thousands of them are destroyed, and are found dead in the morning, in the waters or otherwise.

They never come into a house, nor meddle with any thing that we eat; if they chance to come to a house in their way, there they stop till they die; but if they come to a stack of hay or corn, they eat their way through.

When they march over a meadow, they do it great damage, by eating the roots of the grass; but if they encamp there, they wholly destroy the produce; the land looks like a place where there had been a fire, and the whole surface looks as if strewed with ashes.

The Laplanders are always glad to see these creatures on their march, for it always foretells plenty of more valuable creatures among them: the same cold that sends these out, sending also a number of fowl, squirrels, foxes, and other animals the same way. Wormius has written a complete treatise on this animal, calling it *mus Norwegicus*: this is reprinted at large in his Museum. Phil. Transf. N° 251. p. 112.

They commonly visit the country once or twice in twenty years: Linnæus supposes that they come from the Norwegian Lapland Alps; but Pontoppidan thinks that Kolan's rock, which divides Nordland from Sweden, is their native place.



place. After ravaging the country, destroying the grafts, and infecting the very ground, they at length perish, either through want of food, destroying one another, or in some great water, or the sea.

MOUSE, *Sea*. See APHRODITA.

MOUSE-ear, in *Botany*. See HIERACIUM.

MOUSE-ear Chickweed. See CERASTIUM.

MOUSE-ear, *Scorpion-grass*. See MYOSOTIS.

MOUSE-tail. See MYOSURUS.

MOUSE, in the *Sea Language*, is a sort of knob, usually in the shape of a pear, wrought on the outside of a rope, by means of spun yarn, parlsing, &c. and used to confine some other securely to the former, and prevent it from sliding along its surface. These mouses are particularly used on the stays of the lower mast, to prevent the eye from slipping up to the mast. There is also a smaller one round messengers, formed by intertwisting a small rope round the strands.

MOUSE, *East, Middle, West*, in *Geography*, small islands on the north coast of the island of Anglesea.

MOUSE Harbour, a harbour on the east side of the island of St. John, in the gulf of St. Lawrence, between East Point and Three Rivers.

MOUSH, a town of Turkish Armenia, seated on a river that runs into the Euphrates; 8½ miles S.S.E. of Erzerum. N. lat. 38° 48'. E. long. 41° 40'.

MOUSING a HOOK, in *Sea Language*, the operation of fastening a small cord or line, or several turns of spun-yarn, across the upper part, from the point to the back of it, in order to prevent it from unhooking, by the motion of the vessel, or otherwise.

MOUSSY, in *Geography*, a river of Hindoostan, which crosses Golconda, and runs into the Kistnah, on the borders of the circar of Palnaud.

MOUSTIER, CHARLES-ALBERT DE, in *Biography*, a French dramatic writer, was born in 1761; and having received a good education, he entered, and for a time followed, the profession of the law, which after a few years he abandoned, in order that he might devote himself entirely to the pursuits of literature. In 1790 he published "Lettres à Emilie sur la Mythologie," in six volumes 18mo. written for the purpose of instructing young persons, particularly the fair sex, in fabulous history. His comedies are most known, of which the following are the titles of some: "Le Conciliateur;" "Les Femmes;" "Les Trois Fils;" "Le Tolerant;" and "Alecste a la Campagne." Some of these were exceedingly successful. They are said to be witty and full of point, but the characters are singular, and out of nature. He composed an opera, entitled "Apelles et Campaspe," and some poems. He was a member of the National Institute; and died in 1800, leaving behind him several compositions in manuscript.

MOUSTIERS, in *Geography*, a town of France, in the department of the Lower Alps, and chief place of a canton, in the district of Digne; 15 miles S. of it. The place contains 1831, and the canton 3533 inhabitants, on a territory of 227½ kilometres, in five communes.

MOUTA, a town of Portugal, in Estramadura, on the left bank of the Tagus; 5 miles S. of Lisbon.

MOUTABEA, in *Botany*, Aubl. Guian. 679. t. 274. Juss. 420. a name altered from the *Aymoutabou* of the Indians of Guiana. See CRYPTOSTOMUM, where it is printed, by mistake, *Montabea*.

MOUTABORA, in *Geography*, a small island in the Pacific ocean, near the E. coast of New Zealand. N. lat. 37° 59'. W. long. 193° 7'.

MOUTAN, in *Botany*, the name under which the beautiful tree *Pæony* has come to us from China, and which is

now retained as its specific appellation, by Dr. Sims in Curt Mag. t. 1154, and Mr. Aiton, in Hort. Kew. ed. 2. v. 3 315.

MOUTH, in *Anatomy*. This part of the body is described in the article DEGLUTITION, in which the figure, the openings, and the parts composing the sides of the cavity, are considered. The teeth are described under CRANIUM.

Dr. Derham observes, that the mouth, in the several species of animals, is nicely adapted to the uses of such a part; and well-sized and shaped for the catching of prey, for the gathering and receiving food, the formation of speech, &c.

In some creatures it is wide and large, in others little and narrow; in some it is formed with a deep incisure up into the head, for the better catching and holding of prey, and more easy comminution of hard, large, and troublesome food; in others with a short incisure, for the gathering and holding of herbaceous food. See *Anatomy of BIRDS, FISH, and INSECTS*.

MOUTH is also used, in the courts of princes, for what relates to their eating and drinking. Hence, *officers of the mouth, yeomen of the mouth, &c.*

Daviler defines mouth, an apartment composed of several rooms, as offices, kitchens, &c. where the meat intended for the first tables is dressed by itself. At court, this is called the *king's mouth*.

MOUTH, in the *Manege*, denotes a horse's feeling or sensibility in that part where the bits are applied. See HORSE.

MOUTH, *Ridges of a horse's*. See RIDGE.

MOUTH, *Opening or shutting the*, of a cardinal, is a ceremony used in the consistory of Rome; wherein the pope shuts a new-elected cardinal's mouth, so that he may not speak at all, even though the pope should speak to him; and remains, in the mean time, deprived of all voice, both active and passive, till the calling of another consistory, when the pope opens his mouth again, making a little harangue, to teach him how to speak, and comport himself in the consistory.

MOUTHE, in *Geography*, a town of France, in the department of the Doubs, and chief place of a canton, in the district of Pontarlier; 13 miles S.W. of it. The place contains 1000, and the canton 8641 inhabitants, on a territory of 312½ kilometres, in 24 communes.

MOUTIER, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Delémont. The place contains 467, and the canton 3977 inhabitants, on a territory of 162½ kilometres, in 23 communes.

MOUTIERS, a town of France, in the department of Mont-Blanc, and principal place of a district; the town is divided into the northern and southern parts: the former contains 1470, and its canton 12,202 inhabitants, on a territory of 237½ kilometres, in 24 communes: the latter has 535, and its canton 12,146 inhabitants, on a territory of 707½ kilometres, in 20 communes.

MOUTIERS-les-Mauxfaits, a town of France, in the department of the Vendée, and chief place of a canton, in the district of Les Sables-d'Olonne; 14 miles E. of it. The place contains 349, and the canton 10,634 inhabitants, on a territory of 352½ kilometres, in 18 communes.

MOUTIERS, Trois, a town of France, in the department of the Vienne, and chief place of a canton, in the district of Loudun. The place contains 1257, and the canton 7599 inhabitants, on a territory of 217½ kilometres, in 16 communes.

MOUTON, JEAN, in *Biography*, a great musician, who flourished in the time of Louis XII. and Francis I., to both which princes he was maestro di cappella: several of his masses in four parts appear among the first that were printed



with types, under a patent granted by Leo X., and signed by cardinal Bembo, his prime minister.

Glareanus calls him a Frenchman; but Lud. Guicciardini claims him as a native of the Netherlands. Wherever he was born, it is certain that he spent the chief part of his life in the service of the French court, during the reigns of Louis XII. and Francis I. He was a disciple of Josquin, and master of Adrian Willaert, not his scholar, as Printz, and others after him, have asserted.

Norwithstanding the rapture with which Glareanus speaks of this composer's masses, they seem to us inferior in melody, rhythm, and design, to those of Josquin, de la Rue, and Févin. It is in his fourth mass, that we first met with two flats at the clef, and an accidental flat to A. In scoring this composition from the Museum copy, in four separate books, we found it consisted of fourteen several movements, in which we can discover no variety of measure or subject: nor is the want of melody compensated by richness of harmony, ingenuity of contrivance, or learning of modulation. His motets, however, if not more nervous and elaborate than those of his contemporaries, are more smooth and polished: but he lived in a court.

His motet, "Non nobis Domine," is not only pleasing, but masterly. It was composed in 1509, for the birth of Renée, the second daughter of Louis XII. by Anne of Bretagne, as appears in the body of the motet; and this is sufficient to confute the opinion of Mouton having been the scholar of Adrian Willaert, who, according to his own account, went into Italy very young, during the pontificate of Leo X. Zarlino, *Instit.* 4ta parte, p. 346.

He composed another motet in 1514, on the death of queen Anne de Bretagne; but the best of his compositions that we have seen, is the motet, "Quam pulchra es amica mea," from the song of Solomon. It is composed for three tenors and a base; the subjects of fugue are pleasing, and treated with uncommon clearness and abilities, for so early a period of counterpoint.

**MOUTON d'Or**, an old French coin. See **ANGEL**.

**MOUTOUCHIA**, in *Botany*, *Juss.* 365. (*Moutouchi*; *Aubl. Guian.* 748. t. 299.) See **PTEROCARPUS**.

**MOUVEMENT**, *Fr.* *Movement*, *Engl.* and *Movimento*, *Ital.* in *Music*, are all of nearly the same import in all the three languages. They imply the degree of motion, whether quick or slow, of a melody or musical composition. (See **MEASURE** and **MOTIVO**.) The style and character belonging to each movement, are generally expressed by some peculiar denomination: as *allemande*, *minuet*, *gavot*, *saraband*, *jig*, &c. and every kind of measure that has been used as a dance. All the Italian terms that have been adopted by the rest of Europe, will be explained in their alphabetic place; such as *adagio*, *largo*, *lento*, *andante*, *moderato*, *allegro*, *presto*, &c. which have likewise their shades, their augmentations and diminutions: as *largo*, *larghetto*, *allegro*, *allegretto*, *adagio*, *pici adagio*, *presto*, *pici presto*, &c.

Though slow movements are generally appropriated to sorrow and melancholy, and animated movements to cheerfulness and mirth, there are frequent modifications by which one passion speaks in the tone of another; it is, however, true, that gaiety cannot be expressed by slow sounds; but grief, pain, and despair, have often the language of impatience and fury. Rousseau's five degrees of movement established in music, are *adagio*, *largo*, *andante*, *allegro*, and *presto*; which see.

**MOUZANBANO**, in *Geography*, a town of Italy, in the Veronese; 14 miles S.W. of Verona.

**MOUZON**, a town of France, in the department of

the Ardennes, and chief place of a canton, in the district of Sedan, seated on the Meuse; 9 miles S.E. of Sedan. The town contains 2143, and the canton 7987 inhabitants, on a territory of 200 kilometres, in 17 communes. In this place is a manufacture of ferges. N. lat. 49° 36'. E. long. 5° 9'.

**MOW**, a town of Hindoostan, in Allahabad; 60 miles E.N.E. of Chanderec.—Also, a town of Oude; 20 miles S.E. of Azimgur.—Also, a town in the circle of Chanderec; 8 miles S.E. of Seronge.—Also, a town in Oude; 16 miles N.N.E. of Furruckabad.—Also, a town in Boglennid; 30 miles E. of Rewah.—Also, a town in Bahar; 12 miles N.E. of Hajypour. N. lat. 25° 49'. E. long. 85° 36'.—Also, a town in Oude; 18 miles E.N.E. of Fyzabad.—Also, a town in Allahabad; 20 miles N. of Allahabad. N. lat. 25° 57'. E. long. 83° 48'.

**Mow**, in *Agriculture*, a pile, heap, or collection of corn, straw, hay, or any similar substance placed together for the purpose of being kept in a barn or other building. See **STACK** and **RICK**.

**Mow-burnt**, a term applied to such substances as are over-heated in the mow by the process of fermentation, as hay, corn, &c.

**MOWAH**, in *Geography*, a town of Hindoostan, in Bahar; 32 miles E. of Hajypour. N. lat. 25° 34'. E. long. 86°.—Also, a town in Oude; 20 miles of Fyzabad.

**MOWDHILL**, in *Rural Economy*, a provincial term applied to a mole-hill.

**MOWDIWARP**, a provincial term sometimes signifying the mole.

**MOWEE**, in *Geography, a town of Hindoostan, in Guzerat; 40 miles N.E. of Noanagur.*

**MOWEE**, one of the Sandwich islands, next in size and nearest in situation to Owhyhee; lying at the distance of 8 leagues N.N.W. from it, and 140 geographical miles in circumference. This island is divided by a low isthmus into two circular peninsulas, of which that to the E. is called Whamadooa, and is double the size of the western peninsula, called Owhyrookoo. The mountains in both rise to a great height, being seen at the distance of upwards of 30 leagues. The northern shores, like those of Owhyhee, afford no soundings; and the country presents the same appearance of verdure and fertility. To the S.E., between this and the adjacent isles, there are regular soundings of 150 fathoms, with a sandy bottom. From the W. point, which is low, runs a shoal, stretching out toward Ranai to a considerable distance; and to the southward of this is a fine spacious bay, with a sandy beach, shaded with cocoa-nut trees. Here probably might be found good anchorage, with shelter from the prevailing winds, and the beach might afford a convenient place for landing. The country behind presents a very romantic appearance. The hills rise almost perpendicularly in a variety of peaked forms, and their steep sides, with the deep chasms between them, are covered with trees, among which those of the bread fruit abounded. When La Perouse, in 1786, came within sight of this island, 200 canoes came out to meet him, laden with pigs, fruit, and fresh vegetables, which the inhabitants sent on board, and forced him to accept, without any stipulation on their part. The inhabitants appeared to bear some resemblance to those of Easter island, and indicated a more robust constitution; but it had been impaired by disease. Their common height is about five feet three inches; their habit of body spare, their features coarse, their eye-brows thick, their eyes black, their aspect determined though not ferocious, their cheek-bones high, and their nostrils rather wide; their lips thick, their mouth large, as well as their teeth, which,



which, however, were fine and regular. Some of them had lost one or more of their teeth, which, as a modern navigator supposes, they had pulled out when mourning for their relations or friends. These people are more muscular, their beard more bushy, and their bodies more covered with hair than those of the Easter island. Their hair, which is black, is cut into the shape of a helmet, and the part, which they suffered to grow, representing the plume, was red at the extremity, having probably been coloured with the acid juice of some vegetable. The women are much smaller than the men, and are in general ill-made, with coarse features, a gloomy countenance, and rude, stupid, awkward manners. The inhabitants of this island are gentle and prepossessing, and, in their manner, polite to strangers. They paint themselves, tattoo their skin, and pierce their ears and the cartilage of the nose, in which they wear rings, by way of ornament. They are not circumcised, but they use a kind of infibulation. The dress of both sexes consists of a piece of cloth covering those parts which are commonly concealed, and are then wrapped round their bodies. These cloths, made from the paper mulberry, are beautifully variegated, being painted with great taste. Their houses, collected into villages, are built in the manner of those in Easter island, but their form is square. With regard to their government, it was observed that they were arranged into various tribes, each of which was under the controul of its respective chief. The excellence of the climate and the fertility of the soil would afford the inhabitants every means of happiness, did not leprosy and syphilis rage among them, very generally and with great violence. The inhabitants of this island appeared in 1793 to be in a very distressed state, having suffered much by a war of 11 years' continuance with their neighbours of Owhyhee. N. lat. 20° 34' 30". E. long. 203° 40'. Cook's Third Voyage, vol. iii. Perouse's Voyage, vol. ii.

**MOWGUNGE**, a town of Hindoostan, in Oude; 27 miles E. of Rewah.

**MOWILGONGA**, a river of Ceylon, which runs into the sea at Trinkomali.

**MOWING**, in *Agriculture*, the art of cutting down corn, grass, &c. by the scythe. In the mowing of grain crops, such scythes as are shorter in the blade than the common ones, and which, instead of a cradle, have two twigs of osier put semicircular-wise into holes made in the handles, near the blades, in such a manner that one semicircle intersects the other, are made use of. But for the cutting of grasses longer and thinner scythes are generally in use.

A late practical writer states, that in "the cutting of grass crops for the purpose of being converted into hay, it is necessary that they be in the most suitable states of growth and maturity, for affording the best and most nutritious fodder. With this view, it would seem, that they should neither be cut at too early a period, nor suffered to stand too long; as in the former case there will be considerable loss in the drying, from the produce being in so soft and green a condition, and in the latter from a large proportion of the nourishing properties being expended. It is probable, therefore, that grass, when mown before it becomes in full flower, while the rich saccharine juice is in part retained at the juice of the flower-stems, is in the most proper condition for being cut down, as at that period it must contain the largest proportion of nutritious materials, but which then begins to be absorbed, and taken up in proportion as the flowers expand, and the seeds ripen, so as to constitute the meal or starch of the seed lobes, and is either dispersed upon the land, or fed upon by birds; the grass stems with their leaves being left in a similar situa-

tion to that of the straw of ripened grain. But there are other circumstances, besides those of ripeness, to be attended to in determining the period of cutting crops of grass, as in some cases, when they are thick upon the ground, the bottom parts become of a yellow colour before the flowering fully takes place; under such circumstances it will always be the most advisable practice to mow as soon as the weather will possibly admit; for if this be neglected, there will be great danger of its rotting, or at any rate of its acquiring a disagreeable flavour, and of becoming of but little value. Where grass is very tall, as is often the case in moist meadows, it is liable to fall down and lodge, by which the same effects are produced." In this case, also, the mowing should be performed as soon as possible, "as when much laid it soon becomes rotten, and of little or no use as hay."

However, in cases where there is nothing of this sort, it appears evident, that "the most proper time for performing the business, is when the grass has begun to flower, before the seed stems become hard and wiry; as at this period it would seem to contain the largest proportion of useful matter. Besides, when left to stand too long, the after-grass is not only less abundant, but there is great loss in it by the crumbling down of the stems, in the different operations of hay-making, as has been stated in the Perthshire Report."

It may be noticed, that the usual time of cutting for hay in the first crops, is "from about the middle of June to the beginning of the following month, according to the nature of the land, or as the district is more early or late in the produce."

And in the operation of mowing, the chief art consists in cutting the crop as close to the surface of the ground as possible, and perfectly level, pointing the swathes well out, so as to leave scarcely any ridges under them.

But "in cutting rye, or second crops of grass, more attention in these different respects will be necessary than in the first, as the crops are mostly much lighter and more difficult to cut, the scythe being apt to rise and slip through the grass without cutting it fairly, except when in the hands of an expert workman. Crops of this sort should always be cut as much as possible when the dew is upon them; and as soon as ever there is a tolerable growth, as by waiting the season is constantly getting more unfavourable for making them into hay; and when not well made this hay is of little or no value. When the grass has been decided to be in the proper condition for being cut down, a set of mowers proportioned to the extent of the crop should be immediately provided. In some districts, it is the custom to pay these labourers by the day, but a better and more general practice is, it is supposed, to let the work at a certain price by the acre." The extent or proportion of ground that can be mown in any given space of time, must obviously vary much according to the nature of the ground, the fullness of the crop, and the goodness of the workmen, but in general an acre is supposed a full day's work for an expert mower.

In mowing barley, oats, or other grain crops, the corn is generally on the right hand of the workman; but M. de Lisle had a method of mowing wheat, in which the corn was at his left hand: he mowed it inward, bearing the corn he cuts on his scythe, till it comes to that which is standing, against which it gently leans. After every mower a gatherer follows, who may be a lad, or a woman. The gatherer keeps within five or six feet of the mower, and being provided either with a hook or stick about two feet long, gathers up the corn, making it into a gavel, and laying it gently on the ground: this must be done with spirit, as another mower immediately follows: as to every mower there is a particular gatherer. And to do this work properly,



perly, the mower should form but one tract with his feet, advancing in a posture nearly as if he was going to fence, one foot chasing the other. In this manner the standing corn is mowed; and the workman should take care to have the wind at his left, as it bears the corn towards the scythe, and causes it to be cut nearer the ground. When wheat is bent, the workman takes the corn as it presents itself to him, which has the same effect as if the wind was at his left side. And when it is laid, it is more troublesome to the gatherer, because the cut corn is apt to be mixed with that which is standing; but a good mower takes advantage of the wind, and cuts it against the way it is laid. No particular directions can be given for corn that is lodged and entangled, unless it be to take it as it is inclined, as if the wind were on the back of the mower.

The usual method of mowing grain is, however, in the same manner as for grass, the scythe only having a cradle or bow fixed upon the heel of the handle.

It is stated, in the tenth volume of the Agricultural Magazine, that in the "practice of every department of the kingdom, the scythe is swung horizontally, or nearly level, leaving the stubble of almost an even height; or if it rise on either side, forming what are called swath-balks, the butts of the swaths are suffered to rest upon them, the heads or ears of the corn falling into the hollow or close mown part of the preceding swath-width. They are of course liable, in a wet season, not only to receive an undue portion of rain water, but to be fouled with the splashings of heavy showers." But that in the Kentish practice, which is said to excel those of other districts, "the position of the swaths is different. Here, the heads of the corn rest on the top of the swath-balk, provincially the *beever*, which is left of extraordinary height, as ten to fifteen inches; so that the wind has a free circulation beneath the swaths. The workman, in performing this judicious operation, proceeds with his right foot forward, entering the point of his scythe with a downward stroke, and raising it as abruptly out, bringing the handle round to the left until it forms nearly a right angle with the line of the swath, carrying the corn in the cradle three or four feet behind the place where it grew, lifting it high and letting it fall on the beever behind his left foot, and in the position above described." But "the disadvantages of this method are, the loss of some straw, the incumbrance arising from the length of stubble, and a little additional labour; but in a district where cattle are not numerous, the loss of straw is not felt, and in any country, the principle of laying the heads, instead of the butts of the corn upon the swath-balk, whether left high or low, might be well adopted."

MOWLAY, in *Geography*, a town of Hindoostan, in Baglana; 32 miles N.E. of Basdeen.

MOWRRUD, a town of Candahar; 12 miles S.E. of Candahar.

MOXA, a Japanese word, denoting a soft lanuginous substance, prepared from the young leaves of a species of mugwort, employed by surgeons on the continent as a means of forming an eschar, which is usually made in this country with caustic. A little cone of the moxa is laid on the part which has been previously moistened, and it is then ignited at the top, when it burns down with a temperate glowing heat, and produces a dark coloured spot, the exulceration of which is said to be promoted by the application of a small quantity of garlic. The ulcer is kept open, or healed, according as the indications of the case require. The moxa is famous in the East for curing several diseases, and the French are in the habit of using it; but whenever English

surgeons wish to produce a slough, they prefer caustics to actual fire.

MOXES, or Moros, in *Geography*, a province of South America, in the viceroyalty of Buenos Ayres, situated between the diocese of Cusco and the country belonging to the Portuguese, on each side of the Marmora or Madeira; of considerable extent, inhabited by Indian nations, and little known.

MOXVAO, a town of Portugal, in the province of Beira; 40 miles N.E. of Bragança Nova.

MOY, a town of France, in the department of the Aisne, and chief place of a canton, in the district of St. Quentin; nine miles S.E. of it. The place contains 948, and the canton 11,518 inhabitants, on a territory of 137½ kilometres, in 19 communes.

MOY, a circar of Bengal, bounded on the N.E. by Ghidore, on the S.E. by Carrackdeagh, and on the W. by Rangur and Bahar.

MOY, a post-town of Ireland, in the county of Tyrone; it is situated on the river Blackwater, which separates it from Charlemont in the county of Armagh. Near it is Clonsfele, the residence of Dr. Richardson, the celebrated advocate of Florin culture, which is there extensively carried on. It is 68 miles N. by W. from Dublin, and six from Armagh.

MOY, the name of two rivers in Ireland; one rising in the county of Sligo, after a winding course through that county and Mayo, forms the boundary between them for some miles, and runs into the bay of Killala; the other is in the county of Galway.—Also, a town of Scotland, in the county of Inverness; nine miles S.E. of Inverness.

MOY, a provincial word signifying muggy or close.

MOYA, in *Geography*, a town of Spain, in New Castile; 37 miles E. of Cuenca.—Also, a town of Spain, in Catalonia; eight miles E.N.E. of Manresa.

MOYATTA, a river of the county of Cork, Ireland, which runs from Sheehy mountain to Bantry bay, into which it flows near Ballylickey.

MOYE, LA, a small island near the W. coast of Jersey; four miles W. of Noirmont Point.

MOYENNEVILLE, a town of France, in the department of the Somme, and chief place of a canton, in the district of Abbeville; four miles S.S.W. of it. The place contains 905, and the canton 9428 inhabitants, on a territory of 115 kilometres, in 14 communes.

MOYLE, WALTER, in *Biography*, son of sir Walter of Cornwall, was born at Bake, near Looe, in 1672. He was greatly distinguished at school by his classical attainments; from school he went to Oxford, and having pursued his studies there, he was entered in the Temple, to obtain that kind of legal knowledge, which it behoves every gentleman to possess. He soon became acquainted with the wits of the day, and joined some of them in translating Lucian. He undertook to furnish versions of four of that author's pieces, which he executed with spirit and accuracy. He was warmly attached to the principles of liberty, and in 1695 he took his seat in parliament for the borough of Saltash, but probably the routine of the house of commons had no charms for him, and he appears never to have made any attempt at another seat. He was desirous of confining himself to his studies, and, at the desire of Dr. Davenant, he translated Xenophon's "Discourse upon improving the Revenues of Athens," which was prefixed to the doctor's work on "The Trade and Revenues of England," which was published in 1697. He next appeared as a coadjutor of Mr. Trenchard in "An Argument against a standing Army," at that period the great object of the jealousy



lousy of the friends of liberty. In support of the same cause he published at different times essays on the "Lacedæmonian Government;" and on the "Constitution of the Roman Government." In both these he exposed the intolerant tenors of the established clergy, and argued in favour of an universal toleration of religious sects. He next published "A Dissertation upon the Age of Philopatrius," commonly attributed to Lucian. He extended his enquiries into various departments of natural history, but the state of his health confined him chiefly to pursuits that could be carried on in the house, being unfit to contend with the changes of the atmosphere. He died in 1721: his posthumous works were published in two volumes 8vo. by Thomas Sergeant, esq. in 1726. A third volume was published in the following year by Anthony Hammond, containing his other writings. He has been justly ranked with the most liberal and learned scholars of the age in which he flourished. *Biog. Brit.*

MOYLE, in *Geography*, a river of the county of Tyrone, Ireland, which rises in the northern part of the county, passes Newtown Stewart, and flows into the Mourne a little below Ardstraw.

MOYNALTY, a small post-town of Ireland, in the county of Meath. It is situated on the river Borora, and is 35 miles N. by W. from Dublin, and four miles N. from Kells.

MOYNE, a river of Ireland, in the county of Galway, which joins the river Clare six miles S. of Tuam.

MOYNOU, in *Fortification*. See MOINEAU.

MOYOBAMBA, in *Geography*, a town of South America, on a river of the same name, which runs into the Guallagua; 300 miles N. of Lima. S. lat. 7°. W. long. 76° 56'.

MOYOMBO, a town of Africa, in Congo; 10 miles S.W. of Bombi.

MOYOWLA, a river of Ireland, in the county of Londonderry, which runs into the north-western angle of lough Neagh, about two miles from Toome bridge.

MOYS, a river of Austria, which runs into the Danube, two miles above Korn Neuburg.

MOYSICIEWICZE, a town of Lithuania, in the palatinate of Minsk; 60 miles N.E. of Minsk.

MOZAIK, a town of Russia, in the government of Moscow; 56 miles W. of Moscow. N. lat. 56° 36'. E. long. 35° 44'.

MOZAMBIQUE or MOZAMBICO, a kingdom of Africa, subject to the Portuguese, situated on the E. coast, and on that part of the Indian sea which passes between the continent and the island of Madagascar. It takes its name from that of its chief town, which is seated on an island, the principal of three islands that form a part of the kingdom. This island is however very small, and distant about two miles from the continent. The bay is about three miles in circuit. The other two islands, *viz.* St. George's and St. James's, lie on each side of it, facing the continent. The city of Mozambico is said to consist of well-built houses, churches, and convents; and has a fort or castle, about a musket-shot from the town, which is one of the strongest and best contrived belonging to the Portuguese on this coast. The soil of the island is a white barren sand; over which an artificial mould has been formed, so that it produces very fine citrons, oranges, ananas, figs, and other fruits; but their pulse, roots, and other esculents, are chiefly brought from the continent, and the town is said to have been supplied with rice, wheat, and other provisions from Goa. On the land the soil is fat and fertile in rice, millet, variety of roots, pulse, fruits and plants. The natives

breed a great number of cattle, large and small, particularly sheep with large tails. The country swarms with wild beasts of various kinds, such as elephants, as well as wild stags and boars. In order to preserve themselves from the fierce and destructive elephants, the inhabitants kindle large fires round their sown fields, to prevent their being devoured by them; nor do they shift from their habitations without lighted torches or firebrands to scare them away. The country has mines of gold, which is washed down their rivers and constitutes a great part of their commerce. Ivory, ebony, slaves and cattle are likewise exchanged for European goods, such as little bells, knives, scissors, and razors. Besides the commodities already mentioned, they export silver, copper, wax, rice and other provisions. The kings of Portugal have been at great expence in fortifying and garrisoning Mozambico, and providing it with an hospital for the sick, and a magazine well furnished with a variety of stores for shipping, &c. S. lat. 15° 5'. E. long. 41° 8'.

MOZAMBIQUE, *Straits of*, that part of the Indian ocean, which divides the island of Madagascar from the continent of Africa.

MOZART, LEOPOLD, in *Biography*, vice chapel-master to the prince archbishop of Salzburg, violinist, and director of his band, was born at Augsborg in 1719, and acquired this appointment in 1743. He was intended for the law; but his passion for the study of music was predominant, and he became early in life a useful musician, as author in 1757 of a treatise on the art of playing the violin, and a composer; but what did him most honour, and will endear his name to future times, is the being father of such an incomparable son as Wolfgang, and educating him with such care. In 1764 he set out on a trading voyage with his children, a son and a daughter; visited France, England, and Italy. During his travels with his children to the principal capitals in Europe, he used to accompany them on the violin, the daughter when she sung, and the son when he played on the clavichord or harpsichord. The daughter was the eldest, and when she sung she was not only accompanied on the violin by her father, but by her brother on the harpsichord, which he was able to do in a masterly manner at seven or eight years old. When this excellent father returned to Salzburg, after travelling with his children, he was appointed principal concert master to the archbishop, and became a voluminous composer; a list of his works is given in Gerber. This worthy professor died at Salzburg in 1778.

MOZART, JOHN CHRYSOSTOM WOLFGANG THEOPHILUS, the son of Leopold, was born at Salzburg in 1756. At seven years old he went with his father and sister to Paris, and the year following came to London; in 1769 he went to Italy. In 1770 we met him at Bologna, on his return from Rome and Naples, when he had astonished all the great professors by his premature knowledge and talents. At Rome he was honoured by the pope with the order of the *Speron d'Oro*. From Bologna he went to Milan, where he was engaged to compose an opera for the marriage of the princessina of Modena with one of the archdukes. Two other composers were employed on this occasion, each of them to set an opera; but that of the little Mozart, composed at twelve years old, was the most applauded.

During his residence in London we had frequent opportunities of witnessing his extraordinary talents and profound knowledge in every branch of music at eight years old, when he was able to play at sight in all clefs, to perform extempore, to modulate, and play fugues on subjects given in a way that there were very few masters then in London able to do. But there is, in *Phil. Transf.* vol. lx. for 1770, a minute and curious



curious account of the musical feats of this child in London, during 1765, when he was no more than eight years and five months old, to which we refer our readers. His progress in talents and fame, contrary to all experience, continued to keep pace with the expectations of the public to the end of his life.

He went again to Paris soon after his return from Italy. But on the death of his father in 1778, he was called to Salzburg, and appointed principal concert-master to the prince archbishop, in his stead; but he resigned this office in 1780, and went to Vienna, where he settled, and was admired and patronized by the court and city; and in 1788 he was appointed chapel-master to the emperor Joseph.

His first opera at Vienna was *Die Entführung aus dem Serail*, or the Rape of the Seraglio, in 1782, in German words. The second, "*Le Nozze di Figaro*," in four acts. The third, the "*Schauspiel Director*," or the Manager at the Playhouse, in 1786. "*Il Don Giovanni*," in 1787. "*La Clemenza di Tito*," a serious opera. "*Cori Fantutti*," comic. *Die Zauberflute*, or Flauto Magico. "*Idomeneo*," a serious opera, &c.

It was not till the year 1782, that he began to compose at Vienna for the national theatre; at first chiefly instrumental music; but on its being discovered how well he could write for the voice, he was engaged by the nobility and gentry first to compose comic operas, sometimes to German words, and sometimes Italian. His serious operas, we believe, were all originally composed to Italian words.

There is a chronological list of his latter vocal compositions till the year 1790, in Gerber's Musical Lexicon.

In England we know nothing of his studies or productions, but from his harpsichord lessons, which frequently came over from Vienna; and in these he seems to have been trying experiments. They were full of new passages, and new effects; but were wild, capricious, and not always pleasing. We were wholly unacquainted with his vocal music till after his decease, though it is manifest that by composing for the voice he first refined his taste, and gave way to his feelings, as in his latter compositions for the piano forte and other instruments his melody is exquisite, and cherished and enforced by the most judicious accompaniments, equally free from pedantry and caprice.

It should be known, that the operas of this truly great musician are much injured by being printed in *half scores*, with so busy and constantly loaded a part for the piano forte. Some of the passages, we suppose taken from the instrumental parts in the *full score*; but the editor, who, we are sure, was not the author, has such "a rage for saying something, when there's nothing to be said," (as was remarked of Dr. Warburton in his notes on Shakspeare and Pope, by Dr. Johnson), that there is no contrast: the piano forte has a perpetual lesson to play, sometimes difficult, and sometimes vulgar and common, which, however soft it may be performed, disguises the vocal melody, and diverts the attention from it, for what is not worth hearing. About the middle of the last century, Mondonville composed for the Concert Spirituel at Paris motets to Latin words for a single voice, accompanied by a very difficult and noisy part for the organ, *obligato*; and the effect was intolerable, though the organ part was well played by Balbastre; yet being a perpetual *roulement*, which said nothing to the heart, it was so loud, that it obliged mademoiselle Delcambre to scream to the utmost power of her lungs. There was neither taste, grace, solemnity, nor ingenuity to be discovered. These pieces abounded in notes, *et rien que des notes*, as Jean Jaques used to say of French music in general. Yet these performances were not only tolerated, but

admired by the friends of the old school at Paris. But let us not level the productions of Mozart with those of Mondonville.

In "*Idomeneo*," which is full of fine things, the air in E ♯, at the beginning of the second act, the chorus, "*Alla Siciliana*," in the same key, and the quartet in the last act, &c. are exquisitely beautiful, in different styles. But a commentary on the works of this gifted musician would fill one of our volumes. His reputation continued to spread and increase all over Europe to the end of his life, which, unfortunately for the musical world, was allowed to extend only to 36 years, at which period he died in 1791!

After his decease, when Haydn was asked in our hearing by Broderip, in his music-shop, whether Mozart had left any MS. compositions behind him that were worth purchasing, as his widow had offered his unedited papers at a high price to the principal publishers of music throughout Europe; Haydn eagerly said; "purchase them by all means. He was truly a great musician. I have been often flattered by my friends with having some genius; but he was much my superior."

Though this declaration had more of modesty than truth in it, yet if Mozart's genius had been granted as many years to expand as that of Haydn, the assertion might perhaps have been realized in many particulars.

MOZDOZ, in *Geography*, a town of Russia, in the government of Caucasus, on the Malka; eight miles E. of Ekaterinograd.

MOZE', a town of France, in the department of the Maine and Loire; 15 miles W.S.W. of Angers.

MOZE, in *Agriculture*, a provincial word, sometimes applied to moss, or a lake that is overgrown with moss or other aquatic plants.

MOZYR, in *Geography*, a town of Lithuania, in the palatinate of Minsk; 112 miles S.E. of Minsk.

MOZZANICA, a town of Italy; 12 miles N.N.E. of Lodi.

MRAKOTIN, a town of Moravia, in the circle of Iglau; 20 miles S.S.W. of Iglau.

MRATICK, a town of Bohemia, in the circle of Kaurzim; 10 miles S.S.E. of Erle.

MRI, a town of Egypt, on the W. branch of the Nile; seven miles S. of Faoué.

MRITU, or MRITYU, in *Hindoo Mythology*, a personification of death, and a name of Yama, the Pluto of the Hindoos; applied also to Kal, or Time, and to Siva, the destructive power of the deity. See those articles.

MSCHNO, in *Geography*, a town of Bohemia, in the circle of Boleslaw; 10 miles W. of Jung-Buntzel.

MSLAVL, or MSCISLAW, a town of Russia, in the government of Mogilev, on the Lem; formerly the capital of a palatinate of Lithuania, incorporated with Russia in the year 1773; 60 miles E. of Mogilev. N. lat. 53° 54'. E. long. 31°.

MSTI, a river of Russia, in the government of Novgorod, which runs into the Ilmen lake, near Lipinskoi.

MSTOW, a town of Poland, in the palatinate of Cracow; 44 miles N.N.W. of Cracow.

MTZENSK, a town of Russia, in the government of Orel; 24 miles N. of Orel.

MUAKISIN, a town of Asiatic Turkey, in the government of Diarbekir, on the Euphrates; 10 miles W. of Kerkiseh.

MUANCES, in *Music*, the French term for the change in the names of the notes of the hexachords in solmisation, before the admission of the syllable *fa*. See MUTATION.

MUAR,



MUAR, in *Geography*, a river of Malacca, which runs into the Straits, N. lat.  $2^{\circ} 6'$ . E. long.  $102^{\circ} 27'$ .

MUASSEM, a town of Arabia, in Yemen; 20 miles S. of Abu Arifsch.

MUBAD, a town of Hindoostan, in Oude; 11 miles W.N.W. of Lucknow.

MUC *de la Voix*, Fr. the change or breaking of the voice of a boy at the time of puberty. Tissot.

MUCARÉ, in *Geography*, a town of Arabia, in Hedsjas; 85 miles S.W. of Mecca.

MUCARES, a small island among the Bahamas, surrounded with rocks. N. lat.  $22^{\circ} 13'$ . W. long.  $77^{\circ} 20'$ .

MUCCAPET, a town of Hindoostan, in Golconda; 32 miles S.S.E. of Combamet.

MUCH WENLOCK. See WENLOCK.

MUCHANDERGUR, a town of Hindoostan, in Vifiapour; 10 miles S. of Currer.

MUCHAWIEC, a river of Poland, which runs into the Bog, at Brzesc.

MUCHEIN, or MICHELDA, a town of Saxony, in Thuringia; 37 miles N.E. of Erfurt. N. lat.  $51^{\circ} 18'$ . E. long.  $15^{\circ} 55'$ .

MUCHIETO, a town of the island of Corsica; one mile N. of Cervione.

MUCHIMA, a town of Benguela, on the Coanza; 76 miles N.N.E. of Old Benguela.

MUCHODER, a town of Arabia, in the province of Yemen; situated on a hill and the seat of a Dola, between Taas and Jerim.

MUCHUNDURM, a town of Hindoostan, in Myfore; 12 miles E. of Bangalore.

MUCIDAN. See MUSSIDAN.

MUCILAGE, in *Chemistry*, a name given to an aqueous solution of the vegetable product called gum, and to the mucilaginous matter extracted from several vegetables, such as the bulbs of the hyacinth, the lichens, and several others. From these sources it has recently been employed in calico printing as a substitute for gum arabic, to prevent the colours from running.

Dr Thomson has tried the effect of a number of metallic solutions upon a solution of gum, few of which appear to produce any change. Nitrat of mercury produces a white coagulum, which, however, disappears by shaking, but returns when the solution is much diluted. Prussiat of mercury gives to a solution of gum a slight opaque appearance, but makes no precipitate.

He also found that potash, ammonia, solutions of lime, barytic and strontian alum, sulphat of magnesia and alluminated potash, had no effect upon mucilage. Silicated potash produced a white flaky precipitate, although the solution was much diluted. Dr. Thomson recommends this substance as the best test of the presence of gum. It must be remembered, however, that an acid will produce the same effect upon silicated potash.

Mucilage is used by some writers to designate a peculiar principle distinct from gum. Mucilage, says M. Chaptal, appears to constitute the first alteration of the alimentary juices in vegetables. Most seeds are almost totally resolvable into mucilage, and young plants seem to be entirely formed of it. This substance has the greatest analogy with the mucous fluid of animals. Like that fluid it is most abundant in the earlier periods of life, and all the other principles appear to be derived from it; and in vegetables, as well as animals, its quantity becomes less in proportion as the increase of magnitude, or growth of the individual, becomes less, or ceases. Mucilage is not only the nutritive juice of plants and animals, but when ex-

tracted from either, it becomes the most nourishing and wholesome food with which we are acquainted. It is found in different states in plants: sometimes almost alone, as in linseed, &c.; sometimes combined with substances insoluble in water, which it keeps suspended in the form of an emulsion, as in euphorbium, celandine, &c.; sometimes united with an oil and forming the fat oils; and frequently it is united with sugar, as in the gramineous seeds, the sugarcane, maize, &c. It is also found confounded with the essential salts, with excess of acid, as in barberries, tamarinds, sorrel, &c. Mucilage sometimes constitutes the permanent state of the plant, as in the tremella, conferva, &c. It is also seen in this state in some animals, such as the medusa or sea-nettle, the holothurion, &c. The characters of mucilage are the following: viz. insipidity, solubility in water, insolubility in alcohol, coagulation by the action of weak acids, and the emission of a considerable quantity of carbonic acid, when exposed to the action of fire; at the same time that it becomes converted into coals, without exhibiting any flame. It is likewise capable of passing to the acid fermentation when diluted with water. The formation of mucilage appears to be almost independent of light, for the plants which grow in subterraneous places abound with it: but light is required to enable mucilage to pass into other states, for without this principle, the same plants would scarcely obtain any confidence.

Of the vegetable mucilages the principal are gum arabic, gum senegal, and gum tragacanth. The gum arabic comes directly from Egypt and the Levant, and is obtained in a similar manner with the gum senegal. The principal marts for it were formerly Cairo and Alexandria, till the Dutch introduced the gum from Senegal into Europe about the beginning of the 17th century, which now supplies the greater part of the consumption of this article. The tree which produces the gum senegal is a species of mimosa, which grows in great abundance on the coasts of Barbary, and particularly about the river Senegal. The trees that yield it are from 18 to 20 inches high, with thorny branches, and the gum makes its appearance about the middle of November; the gummy juice oozing through the trunk and branches and in about a fortnight hardening into roundish drops of a yellowish-white colour. The quantity annually sold out of the Senegal country for European consumption is about 1,200,000 pounds weight. This gum is a wholesome nutritious food, thousands of the Moors subsisting upon it during the time of harvest. About six ounces are sufficient to support a man for a day, and it is also mixed with milk, animal broth and other victuals. Among other uses to which the gum arabic is applied, one is that of giving a fine gloss or glazing to ribbands and silks; for which purpose a thin solution is brushed over the silk, which rarely washes away with water, and occasions the appearance of spots in silks after being exposed to rain. See GUM ARABIC, GUM Mucilage, GUM Senegal, and GUM TRAGACANTH. See also MUCOUS Acid and PYRO-MUCOUS Acid, and SUGAR.

MUCILAGE, *Animal*. See ANIMAL MUCUS.

MUCILAGE, in *Pharmacy*, &c. denotes a certain aqueous solution, which is very thick and adhesive; so called as resembling the mucus of the nose.

Mucilages are prepared chiefly from roots and seeds, pounded in a mortar, and infused in hot water, and strained through a cloth: and they are the most relaxing, emollient, and softening remedies in medicine.

The roots principally used for this purpose are those of althæa, mallows, symphytum, &c., the seeds are those of quinces, seawort, &c.



Mucilages enter the composition of several plasters. They are sometimes also made of gums and fruits ; as figs, quinces, isinglass, tragacanth, &c.

The principal mucilages described in the Pharmacopœias are the following :

*Mucilage of acacia*, *Mucilago acaciæ*, P. L. 1809, *Mucilago arabici gummi*, P. L. 1787, is prepared by rubbing 4 oz. of acacia gum, powdered, in half a pint of boiling water gradually added, until it incorporates into a mucilage.

*Mucilage of gum arabic*, *Mucilago mimosæ niloticæ*, P. E. is formed by digesting, with continual agitation, one part of gum arabic, powdered, in two parts of boiling water, until the gum be dissolved ; then straining the mucilage through linen.

*Mucilage of gum arabic*, *Mucilago gummi arabici*, P. D. is prepared by digesting, with frequent agitation, 4 oz. of gum arabic, in coarse powder, in eight pints of boiling water, until the gum be dissolved, and then straining the mucilage through linen.

This mucilage is mostly impure when first formed, from the presence of extraneous matters which have adhered to the gum, [and therefore straining through linen is required. When thus obtained, it is viscid, thick, and adhesive ; semipellucid and nearly colourless, if the gum be good. It has a faint, peculiar odour, and is insipid : it may be kept without alteration for a considerable time ; but at length it becomes sour, and acetic acid is formed. The strong acids act upon it as they do on gum, but diluted they do not alter it. Alcohol converts it into a white curd, but proof spirit makes scarcely any alteration in it : sulphuric ether and compound spirit of ether precipitate a thick, white, tenacious curd : whilst spirit of nitric ether produces no change : tincture of muriatic acid, when diluted, converts it into a brownish, or orange-coloured, insoluble jelly, and acetate of lead gives a copious, dense, flaky precipitate ; but no change is effected by the following metallic solutions, *viz.* superacetate of lead, green sulphate of iron, sulphate of zinc, ozymuriate of mercury, and tartarized antimony, nor by the alkalis or neutral salts.

Mucilage, like gum, serves to combine resins and oils with water, for which purpose, and also to give tenacity to pills, it is much employed in pharmacy. Its properties are the same with those of gum : it forms the usual basis of demulcent mixtures for allaying the tickling cough that occurs in catarrhs and phthisis, and combined with opium and other narcotics it is useful in diarrhœa, dysentery, calculous affections, and ardor urinæ. The dose of mucilage may be from fʒss to fʒj frequently repeated.

*Mucilage of starch*, *Mucilago amyli*, P. L. E. D. is prepared by rubbing three drachms of starch in a pint of water, gradually adding the water to it, and then boiling until it incorporates into a mucilage. Starch rubbed with cold water forms a white opaque fluid, and this, when heated, forms a gelatinous liquor, which may be diffused through more boiling water, but it precipitates after standing. It is insoluble in ether or alcohol. Thomson considers it to be a characteristic of this vegetable matter, that it is soluble in infusion of galls at 120° ; precipitates as it cools, and may again be dissolved by an increase of temperature : this seems to be the result of a combination between starch and the tannin contained in the galls. In cases of phthisis, hectic fever, and abrasions of the stomach, this mucilage is given as a demulcent by the mouth ; but it is more generally and beneficially exhibited in the form of enema in diarrhœa, dysentery, and abrasions of the rectum. It is the common vehicle for exhibiting opium in the form of enema.

*Mucilage of tragacanth*, *Mucilago astragali tragacanthæ*, P. E. is formed by macerating for 24 hours 1 oz. of gum tragacanth in powder, in 8 oz. of boiling water, and carefully triturating the gum, that it may be dissolved ; then straining the mucilage through linen.

*Mucilage of gum tragacanth*, *Mucilago gummi tragacanthæ*, P. D. is prepared by macerating in a covered vessel two drachms of gum tragacanth, in powder, in eight fluid oz. of water until the gum be dissolved ; then straining the mucilage through linen. This mucilage may be used in the same cases as that of gum arabic, but it is chiefly employed for making pills and troches. This is omitted in the P. L. 1809, because it seems to possess no advantage over that of acacia gum, and it is more difficultly soluble, and very thick, and apt to become lumpy in dilution.

*Mucilage of quince seeds*, *Mucilago seminis cydonii mali*, P. L. 1787, *Mucilago seminum cydoniorum*, P. L. 1745, *Decoctum cydoniæ*, or decoction of quince seeds, P. L. 1809, is prepared by boiling over a gentle fire for ten minutes two drachms of quince seeds in a pint of water, and then straining. This mucilage is coagulated by alcohol, acids, and most of the metallic salts : it is more apt to spoil than common mucilage, over which it possesses no other advantage than its being more grateful, and its being sufficiently thin, without further dilution, to form the bulk of any liquid medicine. It is, however, often preferred to the other mucilages as a local demulcent in tenesmus, and in aphthous affections and excoriations of the mouth. A diluted solution of it injected beneath the eye-lids is useful for obtunding the acrimony of the discharge in violent inflammations of the eye. Thomson's Lond. Dispensatory, 1811.

MUCILAGE also denotes a thick pituitous matter, evacuated with the urine in the gravel and dysuria.

MUCILAGINOSA LIGAMENTA, in *Anatomy*, small membranous folds in the knee-joint, and the tendinous thecæ of the fingers and toes. The term is employed by Weibrecht.

MUCILAGO, in *Botany*, a name under which Micheli has comprised some species of that kind of fungus called mucor, consisting of small bladders or vesicles, with seeds affixed to filaments on the inner part.

MUCIUR, in *Geography*, a town of Asiatic Turkey, in Caramania ; 25 miles S.S.E. of Kir-shehr.

MUCK, in *Agriculture*, any sort of material, such as dung, straw, &c. which has undergone fermentation, or lies rotting. See DUNG and MANURE.

MUCK-Midden, a term sometimes used to signify a dung-hill or compost heap.

MUCK-Weed, the common name of a troublesome weed in arable land, the common goose-foot.

MUCK, in *Geography*, a small island on the east coast of Ireland, near the entrance to Larne Lough. N. lat. 54° 51'. W. long. 5° 36'.

MUCK, or Muke, one of the smaller Hebrides, containing about 1000 acres of land ; chiefly arable. N. lat 56° 48'. W. long. 6 12'.

MUCK See MOCK.

MUCKDUMPOUR, a town of Hindoostan ; 30 miles N.E. of Moultan.

MUCKEARN, a town of Scotland, in the county of Argyle ; 14 miles N of Inverary.

MUCKENBERG, a town of Saxony, in the margraviate of Meissen ; 28 miles N. of Dresden.

MUCKENHAGEN, a town of Pomerelia, on the Motlaw ; 7 miles S.S.E. of Dantzick.

MUCKENREUT, a town of Germany, in the principality of Culmbach ; eight miles N.W. of Bayreuth.



MUCKER, a town of Prussia, in the palatinate of Culm; 17 miles N.N.E. of Culm.

MUCKEROW GAUB, a mountain of Bahar; 23 miles W. of Saferam.

MUCKISH, mountains of Ireland, in the northern part of the county of Donegal, W. of Sheephaven.

MUCKRAIZ, a town of Hindoostan, in the circar of Hindia; 17 miles S.E. of Hurda.

MUCKRIS POINT, a cape of Ireland, in the county of Donegal, and on the northern coast of the bay of Donegal, not far from Tilen harbour. N. lat.  $54^{\circ} 35'$ . W. long.  $8^{\circ} 27'$ .

MUCKTERPOUR, a town of Bengal; 33 miles E. of Calcutta.

MUCKUNDGUNGE, a town of Bengal; 18 miles N. of Ramgur. N. lat.  $23^{\circ} 57'$ . E. long.  $85^{\circ} 34'$ .

MUCOCARNEOUS, an epithet used by authors for a sort of abscesses, which are partly made up of flesh, and partly of a thick mucous matter.

MUCONI, in *Ancient Geography*, a people of Africa, in the eastern part of Mauritania Cæsariensis, in the environs of mount Mampserus, according to Ptolemy.

MUCOR, in *Botany*, from *mucos*, to be musty or mouldy, an ancient Latin word, retained by botanists in its original acceptation, for that genus of minute and evanescent *fungi*, found on decaying bread, vegetables, &c. known by the popular name of mould.—Linn. Gen. 569. Schreb. 770. Perf. Syn. 199. Mart. Mill. Dict. v. 3. Hudf. 646. Juss. 3. Mich. Gen. 215. t. 95. Lamarck Illustr. t. 890.—Class and order, *Cryptogamia Fungi*. Nat. Ord. *Fungi*.

Ess. Ch. Head membranous, globose, stalked; at first watery and pellucid; subsequently opaque. Seeds naked, rather coherent.

Perfoon enumerates nine species; three of them with a branched, six with a simple, stalk.—We subjoin an example of each.

*M. flavidus*. Perf. n. 1. Obf. Mycol. fasc. 1. 95. t. 6. f. 5. (Byssus; Schmidel. Ic. 203. t. 52. f. 2.)—Stalk branched. Heads yellowish; afterwards grey. — Found in autumn upon rotten Fungi, especially *Agaricus piperatus*, on which it forms little indeterminate patches. At first this stands nearly upright, and is of a shining yellow; afterwards it lies down, and assumes the aspect of a greyish ash-coloured *Byssus*. The heads are blackish when ripe, and appear somewhat granulated, from the protrusion of the seeds through the bursting coat. The latter are globular and whitish.

*M. Mucedo*. Linn. Sp. Pl. 1655. (*M. vulgaris*; Perf. n. 4.  $\beta$ . *M. vulgaris*, capitulo lucido, per maturitatem nigro, pediculo griseo; Mich. Gen. 215. t. 95. f. 1.)—Stalks simple, crowded. Heads blackish.—This is the most common mould, on all sorts of decaying food, vegetables, fruits, &c. It is at first greyish, with a silvery sparkling appearance; but in a few hours turns greenish, and finally almost black, from the copious ripe seeds, which being gone, leave the expanded coat of the head, or receptacle, in a star-like, jagged, flat form. This is well represented in Hook's *Micrographia*, t. 12. f. 1, copied in Steenbeck's *Fungi*, t. 31.—Perfoon is surely mistaken in considering as a variety of this, the *Ascophora Mucedo* of Tode, fasc. 1. 13. t. 3. f. 22; as Albertini and Schweiniz, in their learned *Confectus Fungorum*, 356, well remark.

MUCOR, a vegetable disease signifying a sort of mould or mildew. See MOULD, MILDEW, and the preceding article.

MUCOSA, in *Ichthyology*, a name given by the Italians to a species of the ray-fish, called by the old authors, *leioraia*, and *bos marinus*; and by the later authors, *raja*, *oxyrynchus*,

and *leioraia*. It is distinguished by Artedi by the name of the variegated ray, with ten prickly tubercles on the middle of the back. See RAJA.

MUCOSÆ GLANDULÆ, in *Anatomy*, two round glands near the bulb of the urethra, often called Cowper's glands. See GENERATION.

MUCOSUM LIGAMENTUM, a name sometimes given to the ligaments which join the roots of the spinous processes together. See SPINE.

MUCOUS ACID, in *Chemistry*, a peculiar acid formed by the mutual decomposition of the nitric acid and gum mucilage. This acid is found to be the same as that discovered by Scheele to be produced by the action of nitric acid on sugar of milk. When nitric acid is moderately heated with half its weight of gum arabic, only till nitrous gas begins to be disengaged, there deposits on cooling a white powder, which, when collected and washed, is the mucous acid. Its feel is granular, and taste slightly sour. When heated *per se* to decomposition, it gives a red sharp-tasted oil, much carbonic acid gas, and a portion of it sublimes in brown scales, smelling like the benzoic acid. The dry mucous acid is very sparingly soluble in water. The hot saturated solution deposits on cooling brilliant scaly crystals. It decomposes the carbonated alkalies at a boiling heat, expelling the carbonic acid, and forming perfectly neutral salts. For a farther account of the properties of this acid, see SACCLACTIC or SACEHOLACTIC Acid.

MUCOUS Fevers, a term used by medical writers to express those fevers in which nature is endeavouring to rid herself of an abundance of pituitous, mucous, and ferous matter. The catarrhal fevers of all sorts are expressed under this denomination. See FEVER.

MUCRO CORDIS, in *Anatomy*, the lower or pointed end of the heart. See HEART.

The word is Latin, *mucro*, where it properly signifies the point of a spear.

Hence, mucronated is applied to whatever tends to or terminates in a point, like that of a spear; as *mucronata cartilago*, &c.

MUCRONATUM OS, the sternum. See LUNG.

MUCU, in *Ichthyology*, the name of a Brazilian fish of the lamprey kind; the *TRICHURUS lepturus* of Linnæus; which see.

MUCUCHIS, in *Geography*, a town of South America, in the viceroyalty of New Granada; 15 miles E. of Merida.

MUCULLAGH ROCKS, rocks in Tralee bay, on the W. coast of Ireland; three miles N.N.W. of Fenit island.

MUCUNA-GUACU, the largest and most beautiful species of phaseolus growing in Brazil: it grows on a tree of the same name: the pod has a black shell, almost as hard as a stone, and covered with soft yellow hair, is a hand's breadth long, and three fingers' breadth wide. When broke open, it discovers three or four very beautiful globular beans, divided by interstices of a scarlet or red colour, round, smooth, and with a large eye, which being macerated in water, are deprived of some part of their noxious qualities; and being prepared with tipioca de mandioca, are eaten by the natives; so that their poisonous quality does not seem so deeply implanted in them by nature, as not to admit of proper correctives; for though the interior substance of the bean, by its acrimony and biting property vellicating the viscera, excites great perturbations in the body, and purges violently by stool and vomiting, the cooling and demulcent medicinal aliment, prepared of the tipioca, serves as an antidote, and is therefore preferable to other things employed to correct it. Ray.



**MUCUND**, in *Geography*, a town of Hindoostan, in Lahore; 14 miles S. of Lahore.

**MUCUNDAUT**, a town of Lamjung; 180 miles N. of Fyzabad. N. lat.  $29^{\circ} 27'$ . E. long.  $83^{\circ} 30'$ .

**MUCUS**, **ANIMAL**, or *Animal Mucilage*, in *Chemistry*, a substance observable in many animal fluids, resembling vegetable mucilage, in being soluble in water, not coagulable by heat, insoluble in alcohol, insipid, and giving a slimy consistence to the fluids with which it is mixed; and on this account denominated *mucus*. Animal mucus is considered by Mr. Hatchett as merely a modification of gelatin; but Dr. Bostock has pointed out a very decisive difference between the two with regard to the manner in which they are acted upon by Goulard's extract, a preparation of lead produced by saturating boiling vinegar with litharge. (See **LEAD**.) This liquor, when added to any fluid containing animal mucus, gives a copious white precipitate, whereas it is not rendered sensibly turbid by a solution of pure jelly. The infusion of galls or tan, which instantly precipitates jelly, has no or scarcely any effect on mucus. Neither gelatin nor mucus is altered by the solution of corrosive sublimate, which copiously precipitates albumen. Consequently, albumen, gelatin, and mucus mixed together, may be separated with tolerable accuracy by the successive application of corrosive sublimate, infusion of galls, and acetated litharge. Animal mucus is generally combined with gelatin and albumen, and always with some salts; upon the whole, it is one of the least abundant of the animal fluids. See **GELATIN**.

**MUCUS of the Joints**, is a mucilaginous liquor, separated by its proper glands, conveniently placed in the interstices of the bones, where those glands are gently pressed by the motion of the parts; it serves to make the extremities of the bones or joints slip more easily.

**MUCUS of the Urethra**, a viscous transparent liquor, serving to line and lubricate the part; that the seed and the urine may slip more freely, without either adhering to or lacerating the part.

It comes from glands lately discovered by Mr. Cowper, about the penis; and is that, which in women is often mistaken for semen.

**MUCUS of the Nostrils**, is a viscid excrementitious humour, separated by its proper glands placed in the internal membrane of those parts. It serves to moisten, lubricate, and defend the olfactory nerves; which, being extremely soft and naked, would, without such provision, be soon spoiled. See **NOSE**.

**MUCUS of Fish**. The bodies of most of the fishes called *alepidotes* by authors, from their having either no scales at all, or only a few small ones, are covered in the place of scales with this mucus. It is a tough and thick viscous liquor, and sticks firmly to the body, defending the skin from injuries from stones, and the like: it is secreted from certain glands placed about the head, and on most parts of the body, but particularly in the linea lateralis. Artedi. See **FISH**.

**MUD**, in *Agriculture*, the sediment deposited at the bottom of rivers, ponds, ditches, &c. As much of this sort of material should be collected as possible, and be thrown up into heaps, in order to become mellow. It contains much carbonaceous matter, and is an excellent manure either in the simple or compound state. See **DUNG**, and **MANURE**.

**MUD-Croom**, a provincial term applied to a tool used by water-workers, and farmers. It is a sort of large hook, with thin flat prongs, and a stout wooden handle.

**MUD-Sheep**, a provincial word applied to sheep of the old Treefwater large breed.

**MUD Island**, in *Geography*, a small island of America, in

the river Delaware, six or seven miles below the city of Philadelphia, on which are a citadel and a fort.

**MUD Lake**, a lake in the state of New York, a little S. of Crooked lake; it gives rise to a N. branch of Tioga river.

**MUD-Walls**, in *Rural Economy*, such as are raised of earthy materials. See **FENCE**, and **WALLS**.

**MUDA**, a town of Italy, in the Bellunese; 10 miles N.N.W. of Belluno.

**MUDANIA**, or **MUNDANIA**, a town of Asiatic Turkey, in the province of Natolia, situated in a gulf, in the S.E. part of the sea of Marmora, and inhabited chiefly by Greeks or Jews, with some Turks. Here the archbishop of Bursa has a palace. The commerce of this place is considerable, and consists in grain, salt, saltpetre, white wine, a variety of fruits, and the manufactures of Bursa, which are brought hither for exportation; 15 miles N.N.W. of Bursa. N. lat.  $40^{\circ} 14'$ . E. long.  $28^{\circ} 54'$ .

**MUDAU**, or **MUDECH**, a town of Germany, in the circle of the Lower Rhine; 10 miles S. of Miltenberg.

**MUDBUNNY**, a town of Hindoostan, in Bahar; 30 miles E.S.E. of Battiah. N. lat.  $26^{\circ} 33'$ . E. long.  $85^{\circ} 16'$ .

**MUDD**, in *Ichthyology*, a name given by the Swedes to the fish called by Schonefeldt and others *aphua* or *aphya*. See **CYPRINUS Aphyia**.

**MUDDAGO**, in *Geography*, a town of Africa, in Fittre; 30 miles W. of Dar-Cooka.

**MUDDY CREEK**, a river of Pennsylvania, which runs into the Susquehanna, N. lat.  $39^{\circ} 17'$ . W. long.  $76^{\circ} 20'$ .—Also, a river of Kentucky, which runs into the Ohio, N. lat.  $36^{\circ} 44'$ . W. long.  $89^{\circ} 18'$ .—Also, a river of Kentucky, called "Pond creek," which runs into the Ohio, N. lat.  $37^{\circ} 19'$ . W. long.  $87^{\circ} 48'$ .

**MUDDY Lake**, a lake of Upper Canada, situated between lakes Huron and George; about 25 or 30 miles long, and not very wide. On it are several small islands, the principal of which is St. Joseph's.

**MUDDY Point**, a cape on the W. coast of Africa. S. lat.  $11^{\circ} 40'$ .

**MUDEN**, a town of Persia, in Segestan; 110 miles N.W. of Zareng.

**MUDERER**, a town of Hindoostan, in the gulf of Cutch; 18 miles S.E. of Boogebooge.

**MUDERIS**, in the Ottoman court. See **CADILESCHER**.

**MUDERNI**, a town of Asiatic Turkey, in Natolia; 24 miles S.W. of Boli.

**MUDGURRY**, a town of Hindoostan, in Bahar; 10 miles N.W. of Burwah.

**MUDJEA**, a town of Bengal; 25 miles E. of Rogo-natpour. N. lat.  $23^{\circ} 32'$ . E. long.  $87^{\circ} 16'$ .

**MUDNAGUR**, a town of Hindoostan, in Oude; 16 miles E. of Bahraitch.

**MUDNISKI**, a town of Russia, in the government of Irkutsk, on the Lena; 92 miles N.E. of Kirensk.

**MUDO**, **HERNANDEZ EL**, in *Biography*, whose real name was Juan Hernandez Navarete, was a native of Logronno, whose ingenuity in the art of painting acquired for him the honourable title of the Spanish Titian. Velasco says, that he was born deaf and dumb, and, therefore, had the appellation of El Mudo, by which he was most generally known. He made himself master in the principles of his art by going to Italy, and studying there some time the works of the great men who then adorned it, particularly of Titian and the Venetian school. After his return to Madrid, he was in 1568 nominated painter to the king, and was employed by him to paint eight large pictures for the Escorial,



of which the most striking was the Decollation of St. James. He painted also for the cities of Valencia, Salamanca, and Estrella; but his last and best work, was of Abraham receiving the three Angels, and which was also deposited at the above-mentioned palace. He died at the age of little more than 40, according to P. Velasco, in the year 1572.

MUDWORT, in *Botany*. See LIMOSELLA.

MUEHRAU, in *Geography*, a town of the duchy of Stiria, on the Muehr, which divides it into two parts, defended by a citadel, situated on an eminence; 32 miles W. of Judenburg. N. lat. 47° 7'. E. long. 13° 52'.

MUEL, a town of Spain, in the kingdom of Aragon; 12 miles S.S.W. of Saragossa.

MUENELUNA, a town of Mexico, in the province of Guaxaca; 60 miles S. of Nexapa.

MUERAGAUT, a town of Hindoostan, in Oude; 54 miles W.N.W. of Lucknow.

MUERDUM, among the Turks, an officer belonging to their mosques, who with his voice calls the people to prayers; thereby supplying the want of bells, which the Mahometans will not use. See BELL and Mosque.

MUERTZENSCHLAG, in *Geography*, a town of the duchy of Stiria; 23 miles E. of Pruck.

MUEZIMS, officers of the mosques among the Mussulmans, whose business it is to ascend five times a day to the minaret, there to proclaim aloud the profession of faith of Mahomet, invite the Mussulmans to prayer, and sing, on festivals, different hymns. In the little mosques, the muezims sweep and arrange the carpets, light the lamps, &c. But this function in the great mosques is reserved for other young ones, called "cayims."

MUFFLE, in *Metallurgy*, is an arched cover, resisting the strongest fire, and made to be placed over copels and tests in the operation of assaying, to preserve them from the falling of coals or ashes into them; though at the same time of such a form, as not to hinder the action of the air and fire on the metal, nor prevent the inspection of the assayer.

The muffles may be made of any form, so that they have these conditions; but those used with copels are commonly made semi-cylindrical, or when greater vessels are employed, in form of a hollow hemisphere.

The muffle must have apertures, that the assayer may look in, and the fore-part of it must always be quite open, that the air may act better in conjunction with the fire, and be incessantly renewed; for without this, scarcely any fumes are to be produced, and without these, the vitrification of lead is scarcely practicable; for when the air is once filled with a certain quantity of vapours, it scarcely admits any more afterwards; and for this reason a constant succession of fresh air is necessary. The apertures in the muffle serve also for the regimen of the fire; for the cold air rushing into the larger opening before, cools the bodies in the vessel; but if some coals are put in it and its aperture before be then shut with a door fixed to it, the fire will be increased to the highest degree, much more quickly than it can be by the breathing-holes of the furnace. Another use of these apertures is also, that the arsenical vapours of lead and antimony, passing through the holes in the back part of the muffle, may not be offensive to the assayer, who stands before it.

As to the height, length, and depth of the muffles, these must be proportioned to the size and number of the vessels they are intended to cover; and care must be taken in this, that all parts of the inner surface of those vessels must be within the reach of the assayer's eye. The most frequent size of the muffle, however, is four inches high, six or eight inches

long, and four or six inches broad. The segments cut off at the bases, for the lesser holes, must be of such a proportioned height, that the least vessels put under it, may not be in the way of coals or ashes falling into them, for that always hinders the vitrification of lead, and the destruction of the other metals and semi-metals, and will sometimes entirely reduce them again when already destroyed; and the scorix, softened by ashes, soften and retard the operation.

Wooden moulds of a proper shape are most convenient for the making of these muffles, and the matter of which they are made is the same with that of the German clay-tests; this is, either a pure native clay, of a condition to bear the fire, which will be known upon the trial; or such clay hardened by a mixture of the powder of stones: and in order to the forming of these, the mafs must be made tolerably soft and pliant. Knead a sufficient quantity of this mafs with your hands upon a flat stone; spread it out evenly into a thin cake or plate, somewhat longer and broader than you intend the muffle to be made; and so thick, that two or more thin plates or lamina, of about two lines thick each, may be cut off from it. This is easily done by rolling the mafs on the stone with a rolling-pin, strewed over lightly with ashes, or powder of chalk.

When the cake is thus rolled out, with a thin, fine, and perfectly straight brass-wire, cut off from the cake one thin plate; this must be done with great caution lest it should break: take this up, and rubbing it over with oil or fat, lay it over the mould; then cut out a semicircular piece from the mafs, of the same thickness with the former, and with this cover the back plane, or farther end of the mould, joining the edges of this plate to those of the former, closely and perfectly, by wetting them well with water.

Next cut off from the cake another thin plate, to be the bottom of the muffle; this may be either left loose for the muffle to be placed on it occasionally, or the bottom edges of the already formed muffle may be joined to it all round by means of water, as the back was before jointed to the arched part of the muffle. But whether it be intended that the bottom should be thus fixed on, or left loose, it must be half an inch broader every way than the bottom of the muffle, that this may stand the more sure and firm upon its basis.

When the muffle is thus made, wet your hand, and rub it carefully all over, that the small, and perhaps invisible, cracks and chinks in the plates may be closely joined, and the whole matter of it applied perfectly close to the surface of the mould.

When the muffle has been some time exposed to the air, and is somewhat dried, and hardened on the mould, cut out two or three hemispherical pieces on each side, to make the holes before described, at the basis and back, and then draw away the mould from within it; for if the muffle is suffered to dry perfectly on the mould, it always cracks. When the whole is perfectly dry, let it be baked in a potter's kiln, or in the assayer's oven; but without great care in the latter method, and lighting the fire at top at first, it is apt to crack; so that the potter's kiln, where at hand, is much the better way of baking it.

If there be adapted to the formerly described convex mould, another concave one nearly fitting it, only leaving room for the thickness of the muffle between them, and the clay be placed between them, and formed by this means into its exact shape, by a strong and every way equal pressure,



ture, this will make muffles not only with much less trouble, but they will be much stronger, less apt to crack, and more capable of resisting the fire, than those made by the hand in the other way.

The only cautions necessary for making these, are, that the clay be a little drier than when it is to be worked by the hand; that the sides, both of the inner and convex mould, and of the outer concave one, be thoroughly oiled or greased, and the pressure on the surface of the outer or concave mould be as strong and equal as may be. There is no clay better for making these muffles than the Windsor-loam, an earth well known among the chemists and glassmen, and always to be found in London; and rubbing the inside of the mould with black lead in fine powder very well supplies the place of greasing them, to prevent the matter from sticking to them.

These are the muffles ordinarily used in assaying; but when very large tests are to be covered, they use large spheroidal muffles, made of cast iron, or sometimes of the same clay, and wrought in the same manner, only made upon proportionably larger moulds. The clay is usually, for these large ones, only laid in a lump on the top of the mould, and with wet hands spread all over it to the bottom, and by this means a muffle is made with little trouble. Cramer.

MUFTI. See MUPHTI.

MUGA, in *Geography*, a town of Spain, in the province of Catalonia; 21 miles N. of Gerona.

MUGALNOOR, a town of Hindoostan, in Coimbatore; nine miles E. of Daraporum.

MUGARDOS, a town of Spain, in Galicia; seven miles W. of Betanços.

MUGDOOMPOUR, a town of Hindoostan, in Bahar; 30 miles N.E. of Monghir.

MUGDUMPOUR, a town of Bengal; 22 miles N. of Boglipour.—Also, a town of Hindoostan, in Bahar; 37 miles S.S.W. of Patna.

MUGELN, NEW, a town of Saxony, in the circle of Leipzig; 25 miles E. of Leipzig. N. lat.  $51^{\circ} 15'$ . E. long.  $12^{\circ} 57'$ .

MUGELN, Old, a town of Saxony, in the circle of Leipzig; two miles N.W. of New Mugeln.

MUGERES ISLANDS, called also *Men-eaters*, or *Women-eaters* islands, are islands situated in the bay of Honduras; 10 leagues S. of Cape Catoche, on the E. coast of the peninsula of Yucatan. On one of them to the S., towards the land, is good anchorage in a depth from seven to ten fathoms, and clear ground.

MUGGENT, in *Ornithology*, the name of a species of fresh water wild duck, called by many authors the *muscaria*, from its catching flies that play on the surface of the water.

It is about the size of the common tame duck; the beak is short and broad, and is of a saffron-colour: it is all over of a mottled colour, like that of the partridge, made up of black, white, brown, and grey, so oddly mixed together, as to shew neither separate; the crown of the head is black, and the feet are yellow.

Mr. Ray suspects this not to be different from our common wild duck. See Duck.

MUGGLETONIANS, in *Ecclesiastical History*, a religious sect, which arose in England about the year 1657, so denominated from their leader Lodowick Muggleton, a journeyman taylor.

Muggleton, with his associate Reeves, set up for great prophets; and, it is said, pretended to an absolute power of

saving and damning whom they pleased; giving out that they were the two last witnesses of God, that should appear before the end of the world.

MUGGUR, in *Geography*, a town of Hindoostan, in Oude; 15 miles W. of Gooracpour. N. lat.  $26^{\circ} 44'$ . E. long.  $83^{\circ} 34'$ .

MUGIA, a town of South America, in the province of Popayan; 36 miles from Santa Fé de Antioquia.

MUGIL, the Mullet, in *Ichthyology*, a genus of fishes of the order Abdominales; of which the generic character is, lips membranaceous, the lower one carinate inwards; it has no teeth; above the angle of the mouth there is a hard callus; gill-membrane with seven curved rays; the covers smooth, and rounded; the body is fleshy and whitish; the scales are large and the dorsal fins two. There are five species, according to Gmelin, but Dr. Shaw has enumerated nine; of these one only is found in our seas.

#### Species.

\*CÉPHALUS; Silvery-grey Mullet. With dusky back, and sides striped with longitudinal blackish lines. Its specific character is, that the first dorsal fin is five-rayed. This fish, the mugil and mugilis of the ancient Romans, is a very common inhabitant of the Mediterranean and Northern seas, frequenting chiefly the shallow parts near the shores, and feeding on worms, sea-insects, and vegetables. It frequently enters rivers; back dusky, varied with blue and green; sides silvery, with broad dusky parallel lines reaching from the head to the tail; belly silvery; scales arranged in parallel rows. The head is almost square, flat on the top; nose blunt; lips thick; in the upper jaw a small roughness; pupil black, encircled with a small silvery line, iris above hazel, below silvery, first dorsal fin near the middle of the back; tail deeply forked. It is found in the Indian and Atlantic, as well as in the European seas: it is observed to assemble frequently in small shoals near the shore, in quest of food, burrowing into the soft mud, and leaving the trace of its head in the form of a round hole. In the spring the mullet, like the salmon, ascends rivers to a considerable distance, and when preparing for these expeditions is observed in shoals near the surface of the water, at which time the fishermen endeavour to avail themselves of the opportunity of surrounding them with their nets. The mullet, though not all fashionable in this country, is said to be an excellent fish. The spawn is often prepared into an inferior kind of caviar, called *botargo*, by drying and salting it.

ALBULA; Silvery-white Mullet. With four rays in the first dorsal fin; very much resembles the cephalus, and is found in the American seas, particularly about the Bahama islands.

CRENILABIS; Whitish Mullet. With brownish stripes, and crenated lips, has the first dorsal fin with four flexible rays; the rays of the second are unarmed. Gmelin mentions three other varieties of this species. 1. Less than the last, lips not crenate; this is called *scheli*. 2. Both lips ciliate, the lower singly carinate; this is named *our*. 3. Upper lip very finely ciliate, the lower singly carinate; this is named *tâde*. This species inhabits the Red sea. It is about a foot long, the scales are broad, with a longitudinal brown keel in the middle.

CHILENSIS. This has a single dorsal fin, and a simple tail. It inhabits the sea round Chili, and the rivers which empty themselves into it; it is twelve inches long, and in shape and scales it resembles the M. cephalus.

CHANOS. This has been called Forskal's mullet; it has a dorsal single fin, and a tail furnished with two wings or processes



processes on each side. By Forskal it is called the mugil *magnus*, or great mullet, as being much larger than the common mullet. By him it was first observed in the Red sea, of which it is a native. It is a yard long; body oblong and silvery, with soft cirri, but without teeth; scales are broad, rounded, finely striate. According to Gmelin a variety has been found nearly as large again. The head is narrower than the body; crown flat, glaucous, naked, upper lip longer, notched in the middle; lateral line recurved near the head and afterwards straight, nearer the back; tail much forked, and furnished towards the middle with two membranaceous wing-like appendages on each side.

**MALABARICUS**; Grey Mullet. With large ciliated scales, and the first dorsal and anal fin falcated. It is about two feet long; head small; nape sinking in a little before the rise of the back; scales large and ciliated, both on the body and gill-covers; those on the head somewhat smaller. It is a native of the Indian seas.

**TANG**; Silver-grey Mullet. With yellowish longitudinal streaks, and scaleless gill-covers. This is not more than a foot long; is a native of Guinea, inhabiting fresh waters, called by the natives *tang*, and regarded by them as excellent food. Of this species there is a supposed variety, in which the gill-covers were scaled, the colour of the fish brighter, the eyes more vertical, and the head smaller.

**PLUMIERI**; Yellow Mullet. With wide mouth, and both dorsal fins spiny. This is of the same length and shape of the other, but has a very large head, wide mouth, and fleshy lips, which appear beset with a row of very small teeth round the edges. It is a native of the American seas, and was first noticed as an object for classification in natural history by Plumier.

**CÆRULEO-MACULATUS**; Blueish-brown Mullet. With silvery abdomen, nine rays in the dorsal fin, and a blue spot in the pectoral fins. This is the size of a common mullet, and is a native of the Indian seas.

**MUGIL Americanus**. See **GOBIOUS Gronovii**.

**MUGKOVSKOI**, in *Geography*, a town of Russia, on the river Mezen; 190 miles E. of Archangel.

**MUGLATORE**, a town of Hindoostan, in the circle of Rajamundry; 35 miles E.S.E. of Rajamundry.

**MUGLEE**, a fort of Hindoostan, in a pass of the Eastern Gauts, between the Carnatic and the Mysore; 12 miles W. of Chittore.

**MUGLIA**, or **MUGLIA-NUOVA**, a small town of Istria, with a harbour for barges, on the gulf of Trieste, about two miles N. of Capo d'Istria, and about 10 miles S. of Trieste.

**MUGLIA Vecchia**, a town of Istria; 2 miles E. of the former.

**MUGLIANO**, a town of Etruria; 24 miles N.W. of Sienna.

**MUGLITZ**, or **MOHELNICE**, a town of Moravia, in the circle of Olmutz; 15 miles N.N.W. of Olmutz. N. lat. 49° 49'. E. long. 16° 46'.

**MUGORA**, a town of Arabia; 35 miles N.N.E. of Ghezan.

**MUGRA**, a town of Africa, in the kingdom of Algiers; 80 miles S. of Algiers.

**MUGRON**, a town of France, in the department of the Landes, and chief place of a canton, in the district of Saint-Séver; 6 miles W. of it. The place contains 2135, and the canton 9182 inhabitants, on a territory of 132½ kilometres, in 13 communes.

**MUGROOR**, a town of Hindoostan, in Berar; 30 miles N.W. of Notchegong.

**MUGUL**, a town of Nubia; 50 miles S. of Sennaar.

**MUGWORT**, in *Botany*, See **ARTEMISIA**.

**MUGWORT**, the common name of a very troublesome weed, the roots of which creep far under the surface of the ground, so as soon to overspread a large space, if they are not stopped. Its seeds are light, and easily carried to a distance by the wind, producing numbers of new plants the next spring. It has plain cut leaves, ending in many points woolly underneath, and single spikes of pale yellow oval flowers, which blow in June or soon after.

**MUHES**, in *Geography*, a town of Sweden, in East Bothnia, on the Ulea; 20 miles S.E. of Ulea.

**MUHKA**, a town of Bengal; 13 miles W. of Toree.

**MUHL**, or **MIHL**, a quarter or division of the archduchy of Austria.

**MUHLBERG**, a town of Germany, in the territory of Erfurt; 12 miles S.W. of Erfurt.—Also, a town of Saxony, in the margraviate of Meissen, seated on the Elbe; containing five churches, a castle, and a cottage; 32 miles N.W. of Dresden. N. lat. 51° 25'. E. long. 13° 15'.

**MUHLBURG**, a town of Baden; 6 miles W. of Durlach.

**MUHL DORF**, or **MIELES DORF**, a town of Saxony, in the Vogtland; 8 miles W.N.W. of Plauen. N. lat. 50° 27'. E. long. 12°.—Also, a town of Germany, in the principality of Culmbach; 5 miles S.S.W. of Hof.

**MUHLENBERG**, a county of Kentucky, bounded N. and N.E. by the county of Ohio, N.W. by Henderson, S.W. and S. by Christian, and S.E. by Logan; 48 miles long, and 31 broad. It is watered by Green and Muddy rivers, with their branches, and contains 1517 people, 116 being slaves.

**MUHLENBERGIA**, in *Botany*, a genus of American grasses, named by the late illustrious professor Schreber, in honour of his and our sagacious and liberal correspondent, the Rev. Henry Muhlenberg, D. D. of Lancaster, in Pennsylvania, who discovered the genus in question, and who has also greatly enriched the *Species Muscorum* of Hedwig by his communications. This gentleman is the author of a treatise on North American Willows, in Sims and König's Annals of Botany, v. 2. 62. His name occurs frequently as the contributor and describer of new plants, in Willdenow's Species Plantarum.—Schreb. Gen. 44. Willd. Sp. Pl. v. 1. 320. Mart. Mill. Dict. v. 3.—Class and order, *Triandria Digynia*. Nat. Ord. Gramina.

Gen. Ch. *Cal.* Glume of one valve, minute, lateral, emarginate. *Cor.* of two nearly equal valves; the *outermost* lanceolate, long, acute, angular, awned, hairy at the base, embracing in its cavity the *inner* one, which is rather shorter and narrower, linear, sharp-pointed. *Nectary* of two small, ovate, gibbous, obliquely truncated leaflets. *Stam.* Filaments three, capillary, shorter than the corolla; anthers linear. *Pist.* Germen superior, ovate; styles two, capillary; stigmas feathery. *Peric.* none, except the corolla, in which the seed is enclosed. *Seed* solitary, oblong, pointed.

*Effl.* Ch. Calyx of one valve, lateral, minute. Corolla of two valves.

1. *M. diffusa*. Spreading Muhlenbergia. Schreb. MSS. Willd. n. 1.—Stem diffuse, branched. Leaves linear-awl-shaped.—Native of Pennsylvania. *Root* perennial. *Stems* spreading, partly procumbent, much branched, leafy, slender, compressed, smooth, with frequent joints. *Leaves* solitary at every joint, slightly spreading, linear-lanceolate, or somewhat awl-shaped, an inch or two long, and a line broad, taper-pointed, flat, entire, minutely downy, very finely striated, furnished with one or two lateral ribs at each side of the mid-rib; sheaths about as long as the leaves, close, striated,



striated, smooth, the lower ones most compressed. *Stipula* small, membranous, crowning the contracted orifice of the sheath, accompanied by a tuft of fine short hairs. *Panicles* terminal, erect, much branched, close, three or four inches long, pale green; their stalks and branches triangular, finely downy. *Flowers* small, resembling those of an *Agrostis* at first sight, each about half a line long without the awn, which is straight, rough, and about twice the length of the flower. Glumes of the *corolla* with a few bristles at the base, angular, and strongly keeled; their keels rough. *Antlers* dark purple.

2. *M. erecta*. Upright Broad-leaved Muhlenbergia. Schreb. MSS.—Stem erect, simple. Leaves broadly lanceolate, many-ribbed.—Native of Pennsylvania. Sent by Dr. Muhlenberg with the foregoing, from which it differs widely in appearance and characters, though there is the strictest coincidence in the structure and habit of the fructification. *Root* perennial, tufted, hard, and rather woody, its buds invested with imbricated, polished, pale, strongly-ribbed scales. *Stems* two feet high, erect, slender, unbranched, leafy, angular, jointed, smooth, except a few dense deflexed hairs under each joint. *Leaves* rather spreading, three or four inches long, and half an inch or more in breadth, flat, taper-pointed, rounded at the base, furnished with a mid-rib, and about four smaller ribs on each side of it, which last are finely hairy underneath; the intermediate *striae* of the leaf are still more minutely rough or downy. *Panicle* straight, erect, close, of much fewer flowers than the first species, but those are ten times as large, resembling some *Bromus* or *Festuca* in habit. Their *glumes* are hairy at the base, strongly fringed, and all the angles are rough. S.

MUHLHAUSEN, in *Geography*, a town of Prussia, in the province of Oberland; 46 miles S.W. of Königsberg. N. lat.  $54^{\circ} 10'$ . E. long.  $19^{\circ} 40'$ .

MUHLHAUSEN, or *Mulhausen*; a city of Saxony, in Thuringia, on the Unstrutt; free and imperial till the year 1802, when it was assigned to the king of Prussia, and by him ceded to the kingdom of Westphalia at the peace of Tilsit. It is divided into the Upper and Lower Towns, and contains two Lutheran churches, and a Roman Catholic establishment of Augustine nuns; 50 miles S. of Goslar. N. lat.  $51^{\circ} 10'$ . E. long.  $10^{\circ} 32'$ .

MUHLHAUSEN, or *Mulhausen*, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Altkirch; 20 miles S. of Colmar. The town contains 6615, and the canton 14,791 inhabitants, on a territory of 120 kilometres, in 14 communes. N. lat.  $47^{\circ} 45'$ . E. long.  $7^{\circ} 25'$ .—Also, a town of Bavaria, in the principality of Aichstatt; 7 miles S.E. of Aichstatt.—Also, a town of Bohemia, in the circle of Schlan, on the Muldau; 10 miles N. of Prague.

MUHLHAUSEN, or *Milehorov*, a town of Bohemia, in the circle of Bechin; 9 miles N.N.W. of Bechin. N. lat.  $49^{\circ} 28'$ . E. long.  $14^{\circ} 13'$ .

MUHOW, a town of Bohemia, in the circle of Leitmeritz; 13 miles W. of Leitmeritz.

MUHR, a town of Germany, in the margraviate of Anspach, on the Altmühl.

MUHRAU. See MUCHRAU.

MUHRECK, a town of the duchy of Stiria, on the Muehr; 12 miles N. of Pettau.

MUJACO, a kingdom in the interior part of Africa, N. of Anziko, and about 450 miles from the sea.

MUJAXAR, or MUXACRA, a sea-port town of Spain, in the province of Granada, situated on a small bay of the

Mediterranean; supposed to be the ancient "Murgis;" 35 miles N.E. of Almeria. N. lat.  $37^{\circ} 5'$ . W. long.  $2^{\circ} 1'$ .

MUID, a large measure, formerly in use among the French for dry commodities: as corn, pulse, salt, lime, coals, &c.

The muid is no real vessel used as a measure; but an estimation of several other measures, as the septier, or setier, mine, minot, bushel, &c.

At Paris the muid of wheat, pulse, and the like, is composed of twelve setiers, each setier making two mines, the mine four minots, the minot three bushels, or boisseaux, the bushel four quarts, or sixteen litrons. A muid of wheat weighs about 2880 pouds de marc; and a setier 240lbs. The muid of oats is double that of wheat, containing 24 setiers. The boisseau is a cylinder 8 inches  $2\frac{1}{2}$  lines in height, and 10 inches in diameter; its contents are, therefore, 644 French cubic inches, or 780 English: hence 11 setiers of Paris = 6 English quarters, and 11 boisseaux = 4 English bushels. A muid of salt contains 12 setiers, and a setier 4 minots, 16 boisseaux, 256 litrons, or 4096 mesures, weighing in all about 400lbs. pouds de marc, or 432lbs. avoirdupois. A muid of charcoal contains 20 mines, 40 minots, or 320 boisseaux.

MUID is also one of the nine casks, or regular vessels used in France, to put wine and other liquors in. The muid of wine divided into 2 demi-muids, 4 quarter-muids, and 8 half quarter-muids, contains 36 setiers, each setier 8 pintes, Paris measure; so that the muid contains 288 pintes, but only 280 pintes without the lees. The pinte contain 2 chopines, 4 demi-setiers, or 8 poissons, in all  $47\frac{3}{4}$  French cubic inches, or  $57\frac{1}{2}$  English; hence a French pinte is nearly equal to an English quart; and a muid of wine contains  $71\frac{1}{2}$  English gallons.

MUIR, in *Agriculture*, a term used in the northern parts of the kingdom to signify moor. It is the common term in Scotland.

MUIRKIRK, in *Geography*, a town of Scotland, in the county of Ayr; in which are manufactures of iron and of coal tar; 20 miles E. of Ayr.

MUIS, SIMON DE, in *Biography*, a native of Orleans, was born in the year 1587. He was educated for the church, and received promotion from Lewis XIII. who also nominated him professor-royal of the Hebrew language at Paris. He is considered still as one of the ablest Hebrew scholars that France ever produced. He was distinguished likewise as a commentator on the Scriptures. He published a "Commentary on the Psalms," which is thought to be one of the best critical illustrations of that portion of the Bible. He died in 1644, leaving behind him many very learned works that do honour to his industry, talents, and erudition, the titles of which are enumerated in Moreri, and in the Gen. Biog.

MUKAR, in *Geography*, a town of Hindooistan, in Bahar; 23 miles N.E. of Chuprah. N. lat.  $25^{\circ} 57'$ . E. long.  $85^{\circ} 13'$ .

MULA, a town of Spain, in Murcia, celebrated for its baths; 20 miles W. of Murcia.

MULÆ, a word used by some medical writers to express pustules on the skin, which are owing to extreme heats, or to cold.

MULANGER, in *Geography*, a town of Hindooistan, in Tellingana; 32 miles W. of Warangole.

MULATAS, a cluster of small islands in the Spanish main, near the isthmus of Darien. N. lat.  $9^{\circ} 20'$  to  $9^{\circ} 35'$ . W. long.  $78^{\circ} 5'$  to  $78^{\circ} 30'$ .

MULATRE POINT, a cape on the E. coast of the island of Dominica. N. lat.  $15^{\circ} 25'$ . W. long.  $61^{\circ} 17'$ .

MULATTO,



**MULATTO**, a name given in the Indies to those who are begotten by a Negro man on an Indian woman; or an Indian man on a Negro woman.

The word is originally Spanish, *mulata*, formed of *mula*, a mule, as being begotten of two different species.

Those begotten of a Spanish woman and an Indian man, are called *metis*; and those begotten of a savage by a *metis*, are called *jambos*. These are all very different in colour, and in their hair.

**MULATTO Point**, in *Geography*, the S. cape of the port of Ancon, on the W. coast of South America; 16 or 18 miles N. of Cadavayllo river.

**MULAZZO**, a town of Genoa; 15 miles N. of Spezza.

**MULBERRY TREE**, in *Botany*. See **MORUS**.

**MULBERRY-Tree**, in *Agriculture*, the common name of a tree of which there are several species, but those generally cultivated, are the white or silk-worm mulberry. For the cultivation of the mulberry-tree, see **MORUS**.

The ripe fruit of this tree abounds with a deep violet-coloured juice, which in its general qualities agrees with that of the other acido-sulces, allaying thirst, partly by refrigerating, and partly by exciting an excretion of mucus from the mouth and fauces; a similar effect is also produced in the stomach, where, by correcting putrescency, a powerful cause of thirst is removed. This is more especially the case with all those fruits in which the acid much prevails over the saccharine part, as the currant, which we have already noticed; and to which the medicinal qualities of this fruit may be referred; but both these, and most of the other summer fruits, are to be considered rather as articles of diet than of medicine. The London College directs a *syrupus mori*, which is an agreeable vehicle for various medicines.

The bark of the root of the mulberry-tree has an acrid bitter taste, and possesses a cathartic power. It has been successfully used as an anthelmintic, particularly in cases of tænia. The dose is half a drachm of the powder. Woodville Med. Bot.

The more general cultivation of mulberry-trees in England might be of greater use than is at present supposed in many respects. In Devonshire they have a way of mixing mulberry-juice with their cyder in the making, and this makes the very best of all English vinous liquors.

And as to the great article of breeding silk-worms, though a recommendation from the crown could not bring about the planting these trees in sufficient number for it in James the First's time, yet the trees have been found to flourish every where with us when properly planted, and the worms feed very kindly and work very well with us. When this manufacture was first attempted, the people of many parts of England, nay, and in some parts of the dampest places in Ireland, tried it, and always with success. The only thing that stopped the progress of so valuable a thing at that time, was the want of a sufficient quantity of mulberry-trees, and the scheme has been neglected ever since. Phil. Transf. N<sup>o</sup> 133.

The tree was always esteemed by the ancients for its delicious fruit, before the use of its leaves was ever found out. The Romans, in the height of their luxury, preferred it before all the foreign fruits; and Columella and the other ancients are very express in the methods of propagating it.

The fustick-wood, which grows plentifully at Campeachy, and is exported from Jamaica, is a species of the mulberry: as is also the China and Japan mulberry-tree, of the bark of which the inhabitants make paper; and in some of the islands of the south sea a kind of cloth is made of it.

**MULBERRY-Blite**. See **BLITUM**.

**MULBERRY-Cyder**, a name given by the people of Devon-

shire, and some other parts of England, to a sort of cyder rendered very palatable by an admixture of mulberry-juice in the making: they choose for this purpose the ripest and blackest mulberries, and pressing out their juice and mixing it with a full-bodied cyder at the time of the grinding, and pressing, give just so much of it as adds a perceptible flavour. It is very worthy the attention of people who live in other counties, where strong and good cyder is made, that this renders it a sort of wine much more agreeable than any other English liquor, and might be brought into general use, to the great advantage of the dealer. The colour of this liquor resembles that of the brightest red wine, and the flavour of the mulberry never goes off. Phil. Transf. N<sup>o</sup> 133.

**MULBERRY-Shell**, a species of *dolium*.

**MULBERRY-Island**, in *Geography*, a small island in James river, Virginia. N. lat. 37° 6'. W. long. 76° 32'.

**MULCH**, in *Gardening*, a term made use of to signify such straw dung as is somewhat moist but not rotted. It is found useful for protecting the roots of new-planted choice trees or shrubs from severe frost in winter, and from being dried by the fierce sun or drying winds in spring and summer, before they are well rooted; in which cases it is spread evenly on the surface of the ground round the stems of the trees, as far as the roots extend, about three or four inches thick, but which should be augmented in winter, when the severity of the frost renders it necessary. It may also be employed for many other purposes of a similar nature.

**MULCOM**, in *Geography*, a town of Sweden, in Warmeland; 13 miles N.E. of Carlstadt.

**MULCT**, **MULCTA**, a penalty, or fine of money, imposed for a fault or misdemeanor.

**MULDA**, in *Geography*, a town of Saxony, in the circle of Erzgebirg; 8 miles S.S.E. of Freyberg.

**MULDAU**, or **MÖLDAU**, a river which rises near the mountains between Bohemia and Bavaria, S.W. of Prachattitz, passes by Budweis, Teyn, Prague, and joins the Elbe a little above Melnik.

**MULDENHAMMER**, a town of Saxony, in the circle of Erzgebirg; 6 miles W. of Schwarzenberg.

**MULDONICK**, or **DEER-ISLAND**, one of the small western islands of Scotland. N. lat. 56° 53'. W. long. 7° 25'.

**MULDORF**, a town of the archbishopric of Salzburg, on the Inn, ceded to the elector of Bavaria in 1802; 36 miles N.W. of Salzburg. N. lat. 48° 12'. E. long. 12° 27'.

**MULDSCHEN**, a town of Prussian Lithuania; 16 miles S.W. of Insterburg.

**MULE**, in *Zoology*, the *Equus Asinus Mulus* of Linnæus, the *Onos* of Aristotle, the *Mulas* or *Mula* of Pliny, Gesner, Aldrovandus, Jonston, Sloane, and others. The *Asinus biformis* of Klein, and the *Grand Mulet* of Buffon, is the hybrid produce of a jack-ass with a mare: having a large clumsy head, long erect ears, a short mane, and a thin tail. The *Equus Asinus Hinnus* ♂, called *Bardeau* by Buffon, is the hybrid produce between the she-ass and a stallion: the head is long and thin, the ears are like those of a horse, the mane is short, and the tail is well filled with hair. This is the *Onos* of Aristotle, the *Hinnus* of Pliny, Gesner, Aldrovandus, Jonston, Ray, &c. and the *Petit Mulet* of Buffon.

The former, or *Mule* commonly so called, is much valued for the saddle and for drawing carriages in Spain, Portugal, Italy, and the East, and in the warmer parts of America. In these countries, where great attention is paid to the breed, it is as tall as the horse, exceedingly well limbed, but not so handsome, especially about the head and tail: these



these animals are mostly sterile; some indeed have thought that they are altogether incapable of producing their kind: but some few instances have occurred, in which female mules have had foals, and in which even the male has impregnated females both of the ass and horse species, though such instances are exceedingly rare. The mule called the *Bardeau*, is much smaller, and less useful, as well as less common, than the mule, and of a more reddish colour: its ears and tail have a similar resemblance to those of the horse, but the mane is short like that of the mule: it is, however, little known, being seldom cultivated designedly, because it is less hardy and less fitted for the various purposes of life, than the horse, the ass, or the mule.

Mules have been reckoned a kind of monsters, and it has been generally thought that they do not propagate their breed. And yet the ancients mention a sort of mules, that were prolific in Phrygia, Syria, Cappadocia, and Africa.

Witness Aristotle, Hist. Animal. lib. vi. cap. 36. Varro de Re Rustica, lib. ii. cap. 1. Columella, lib. vii. cap. 36. Theophrastus, and, after him, Pliny, lib. viii. cap. 44.

Steno, examining the testicles of a mule, found *ova* therein, with a sort of placenta about them; which persuaded him, that mules might engender without any miracle. But the observation has been thought fanciful, and the conclusion seemed unworthy of so able a naturalist.

This is a subject that has engaged the particular attention of the ingenious naturalist Buffon. With a view of distinguishing the relative influence of males and females in the product of generation, he has investigated the differences which subsist between the two animals above briefly characterised. The *bardeau*, he says, is much smaller than the mule, and seems to preserve the dimensions of its mother, the she-ass; and the mule retains the dimensions of the mare. Hence, he concludes, that, in the mixed species, the size of the body appears to depend more upon the mother than the father. These two animals also differ in figure. The neck of the *bardeau* is thinner, the back sharper, and the crupper more pointed; while the forehead of the mule is better shaped, the neck more beautiful, the sides rounder, and the crupper more plump. Hence both these animals retain more of the mother than of the father, not only in magnitude, but in figure of body. But this remark does not apply to the head, limbs, and tail. The head of the *bardeau* is longer, and not so thick in proportion as that of the ass; and the head of the mule is shorter and thicker than that of the horse: so that in the figure and dimensions of the head, they have a greater resemblance to the father than to the mother. The tail of the *bardeau* is garnished with hair nearly in the same manner as that of the horse; and the tail of the mule is almost naked, like that of the ass. In this extreme part of the body, therefore, the similarity to the father predominates. The ears of the mule are larger than those of the horse; and the ears of the *bardeau* are shorter than those of the ass. The limbs of the mule are hard and limber, like those of the horse; and the limbs of the *bardeau* are more fleshy. Hence it appears, that these two animals, in the form of the head, limbs, and other extremities of the body, have a greater resemblance to the father than to the mother. From various experiments on the he-goat and ewe, the dog and she-wolf, and the goldfinch and canary-bird, our author infers, as a certain fact, that the number of males, which is always greater than that of females in pure species, is still greater in mixed species: and hence he concludes, that the male, in general, has a greater influence in the produce of generation than the female, because he transmits his sex to the greatest number, and because the number of males is augmented, in proportion to the remoteness of

the species which intermix. He also observes, that in crossing the remotest of different races, we shall procure not only the most beautiful productions, but the greatest number of males; and he adds, that crossing the breed, both in man and in other animals, is the only mode of ennobling and preserving the perfection of the species. To these facts and experiments he subjoins the testimony of the ancients in reference to this subject. Aristotle (whom we have already cited) says, that the mule engenders with the mare, and that the junction produces an animal which the Greeks call "hinus," or "ginnus." He also remarks, that the mule easily conceives, but seldom brings the fœtus to perfection. Of these two facts, says M. Buffon, the second is more rare than the first; and both happen only in warm climates. In such climates, however, facts justify the assertion, that the female is not only capable of conception, but of bringing the fœtus to full maturity. Such cases occur in Spain and Italy, but much more frequently in the West Indies. Upon the whole it must be admitted, as an established fact, that the he-mule can generate, and the she-mule produce. Like other animals, they have a femal liquor, and all the organs necessary to generation. But mongrel animals are always less fertile, and more hardy than those of a pure species. Besides, mules have never produced in cold climates, seldom in warm regions, and still more seldom in temperate countries. Hence their barrenness, without being absolute, may be regarded as positive; since their productions are so rare, that few examples only can be collected. The facts, nevertheless, are sufficiently numerous to expose the error of adopting false names, and applying them, without sufficient discrimination, to all animals of a mixed species. Thus the word *mule*, in its original acceptation, included the idea of barrenness common to the animal proceeding from the ass and mare; and hence the idea of barrenness has been conveyed to all beings who have the denomination of *mules*, that is, to quadrupeds, birds, fishes, and plants. Buffon's Nat. Hist. by Smellie, vol. viii. 8vo.

Mules have been much employed both in ancient and modern times. The Roman ladies had equipages drawn by mules, as appears from the medals of Julia and Agrippina. And at this day, in Spain, the coaches of the nobility, and even of princes, are usually drawn by no other than mules.

We are assured, that M. de Thou, first president of the parliament, had the fourth coach in France, in 1585, till which time every body rode to court, parliament, &c. on mules.

These animals are very hardy. Savoy produces very large ones, but the finest are bred in Spain.

Mules are chiefly used in countries where there are rocky and stony ways, as about the Alps and Pyrenées, &c. Great numbers of them are kept in these places: they are usually black, and are strong, well-limbed, and large, being mostly bred out of fine Spanish mares.

The mules are sometimes fifteen or sixteen hands high, and the best of them are worth forty or fifty pounds a-piece. No creatures are so proper for large burdens, and none so sure-footed. They are much stronger for draught than our horses, and are often as thick-set as our dray-horses, and will travel several months together, with six or eight hundred weight upon their backs. It is a wonder that these creatures are not more propagated in England, as they are so much hardier and stronger than horses, and are less subject to diseases, and will live and work to twice the age of a horse.

Those that are bred in cold countries are more hardy and fit for labour than those bred in hot; and those which are light



light made are fitter for riding than horses, as to the walk and trot; but they are apt to gallop rough, though these do it much less than the short-made ones.

They take so much after the mare from which they are bred, that they may be procured of any kind, light or strong, as the owner pleases. The general complaint we make against them is, that they kick, and are stubborn; but this is only owing to our neglect in the breeding of them, for they are as gentle as our horses in countries where they are bred with more care.

Mules generated between the horse and a she-ass are the least valuable. They are commonly very dull, and take after the ass, and are not large; the other breed between an ass and a mare is, therefore, what is propagated chiefly in all countries where mules are used. The he-ass must be procured for this breed; and in Spain, where mules are greatly esteemed, they will give fifty or sixty pounds for a fine he-ass, only to be kept as a stallion. They breed with this creature out of the finest and largest mares they have, giving the ass an advantage of height of ground, and putting the mare into a narrow pit, railed on each side.

If the ass designed to be bred on is suckled by a mare, or the mare suckled by an ass, it makes them much more familiar than they would otherwise be; and this may always be done, by taking away the colt that belongs to the dam, and putting the other in its place, keeping them in the dark ten days or a fortnight. However, the success in breeding of these, as well as most other animals, depends in a great degree upon the manner of keeping them while young.

In respect to the she-asses, they should be well fed, and be kept in good order, both before they drop their foals, and afterwards while they suckle. And the foals, when weaned, should be carefully fed, and defended from the cold in the winter season; sufficient exercise in the open air being allowed every day, when the weather is fine.

It is well known, that in the West Indies much of the labour on the plantations is performed by these animals. And Mr. Carpenter remarks, that mules used in agriculture on light soils, and particularly in some situations, are very serviceable, though not very common in these parts. He knows but of two teams in which mules do all the work on the farms: the one belongs to Samuel Skey, esq. of Spring Grove; the other Mr. Teverel's, near Worcester, consisting of seven handsome mules, and bred by the former gentleman, who breeds and keeps a considerable number, many of them fifteen or sixteen hands in height, and some of a milk-white colour. The most beautiful of the white mules Mr. Skey reserves for drawing his carriage, for which he has been offered a very high price. They are bred from grey or white mares, and a white and spotted foreign ass, which curious animal he has had possession of many years. Mr. Carpenter has very lately seen Mr. Teverel's mules at work, and afterwards in the stable, where they are fed with good straw; and he was assured that straw was their only food, it being then winter. Their hardiness is certainly a valuable property, as these mules, though kept to hard work, looked remarkably sleek and well. Their longevity is also a very considerable advantage. Mr. Skey remarked, that two working mules in Shropshire had arrived to the age of seventy years each; and he has been informed, by a person who has taken much notice of this breed, that though they will perform a deal of work when only two or three years of age, they do not arrive to perfection till about thirty.

But when three years old, mules are proper for use, or being employed as stallions.

And in the breeding of these animals, mares that are of a very large breed and well made should be employed. They should be young, full of life, large barrell'd, but small limbed, with a moderate sized head, and a good forehead. It is found of advantage to have the foals, from the time of their being dropped, often handled, to make them gentle: it prevents their hurting themselves by skittishness and sudden frights; and they are much easier broken at the proper age, and become docile and harmless, having nothing of that viciousness which is so commonly complained of in these animals. They may be broken at three years old, but should never be permitted to do much hard work till four; as they are thus secured from being hurt by hard labour, till they have acquired strength enough to bear it without injury.

It was found by an expert breeder of these animals, that by feeding them too well while young, though it made them very fat, it was far from being any advantage to them; as it was not only incurring a much larger expence than was any ways necessary, but also made them wonderfully nice and delicate in their appetites ever after, and also, by increasing their weight of flesh, rendered them more subject to strains and hurts in their morning gambols. He therefore contented himself with giving them food enough to prevent their losing flesh, and to keep up their growth, without palling their appetites with delicacies, or making them over fat. He also took care to defend them from the injuries of the weather, by allowing them stable room, and good litter to sleep on, besides causing them every day to be well rubbed down with a hard wisp of straw by an active groom. This was scarcely ever omitted, particularly in cold, raw, wet weather, when they were least inclined to exercise themselves in a proper manner.

MULE in the *Manufactures*. See CLOTH, and Cotton MANUFACTURE.

MULES, among *Farriers*. See SCRATCHES.

MULE, *Fairchild's*, in *Botany*. See DIANTHUS, and MULES, below.

MULE's *Fern*. See HEMIONITIS.

MULES, among *Gardeners*, denote a sort of vegetable monsters, produced by putting the farina fecundans of one species of plant into the pistil, or utricle, of another.

The carnation and sweet-william being somewhat alike in their parts, particularly their flowers; the farina of the one will impregnate the other; and the seed so enlivened will produce a plant differing from either. An instance of this we first had in Mr. Fairchild's garden at Hoxton; where a plant was seen neither sweet-william nor carnation, but resembling both equally: this was raised from the seed of a carnation that had been impregnated by the farina of the sweet-william. These couplings being not unlike those of the mare with the ass, which produce the mule, the same name is given them: and they are, like the others, incapable of multiplying their species.

This gives us a hint for altering the property and taste of any fruit, by impregnating one tree with the farina of another of the same class; e. gr. a codlin with a pear-main, which will occasion the codlin so impregnated to last a longer time than usual, and to be of a sharper taste. Or, if the winter fruits be fecundated with the dust of the summer kinds, they will ripen before their usual time. And from this accidental coupling of the farina of one with another, it may possibly be, that in an orchard where there is a variety of apples, even the fruit gathered from the same tree differ in their flavour, and in the season of maturity.



It is also from the same accidental coupling that the numberless varieties of fruits and flowers raised every day from seed proceed.

MULELACHA, in *Ancient Geography*, a town of Africa, in Mauritania Tingitana, on a promontory which extended into the Atlantic, according to Pliny.

MULETA, LA, in *Geography*, a town of Naples, in Calabria Citra; 16 miles E.S.E. of Scalea.

MULETS, in *Commerce*, fines laid on ships or goods, and applied to the maintenance of consuls, garrisons, &c.

MULEVO, in *Geography*, a town of Russia, in the government of Viatka, on the Kama; 16 miles S. of Sarapul.

MULFINGEN, a town of the duchy of Wurzburg; 31 miles E. of Wurzburg.

MULGOM, a town of Hindoostan, in Baglana; 47 miles S.E. of Saler-Mouler.

MULGRANOC, in *Ichthyology*, an English name for a small sea-fish, caught on the Cornish and other shores, the *alauda non cristata* of Rondeletius, the *blennius pholis* of Linnaeus, and the *galeotto* of other authors.

MULHARGUNGE, in *Geography*, a town of Hindoostan, in the circar of Gohud; 11 miles S. of Lahaar.

MULHAUSEN. See MUHLHAUSEN.

MULHEIM *am Ruhr*, a town of the duchy of Berg, on the Ruhr; 14 miles N. of Duffeldorp.

MULIER, in *Law*, signifies lawful issue born in wedlock, but begot before.

If a man have a son by a woman before marriage, which is a bastard and illegitimate; and he afterwards marries the mother of the bastard, while with child of another, and they have another son; this second son is called *mulier*, and is lawful, and shall be heir to his father. These we sometimes also find with the additions *bastard eigne*, and *mulier puisne*.

Some derive the word from the Latin *melior*, or French *meilleur*, better; in regard the condition of a son born thus is better than that of an elder brother born before wedlock. Though, according to Glanvil, the lawful issue is rather called *mulier* than *melior*, because begotten on *mulieres* and not on *concubine*; for he calls such issue *filios mulieratos*; opposing them to bastards. Agreeable to which, Briton has *frere muliere*, i. e. the brother begotten of the wife; in opposition to *frere bastard*.

The like seems to obtain in Scotland, where, according to Skene, *mulieratus filius* is a lawful son, begot of a lawful wife.

MULIER was also anciently used as an addition for a wife; sometimes also for a widow. According to Coke, virgin is also included under the name *mulier*.

MULIERTY, the being or condition of a *mulier*, or lawful issue. Co. Litt. 352.

MULINAZZO, in *Geography*, a town of Sicily, on the S. coast, at the mouth of the river St. Croco; 18 miles W. of Modica.

MULINGEN, GROSS, a town of Germany, in the duchy of Anhalt Zerbst; 14 miles W. of Zerbst.

MULINGEN, Klein, a town of the duchy of Anhalt Zerbst; 12 miles W. of Zerbst.

MULIVADDY, one of the principal rivers in Ceylon, takes its rise at a small distance from that of Malivagonga, at the foot of Adam's Peak, a high mountain in the S.W. of Candy, and runs towards the W. coast.

MULKAPOUR, a town of Hindoostan, in Golconda; 20 miles S.E. of Hydrabad.

MULKEE, a town of Hindoostan, in Canara; 16 miles

N.N.W. of Mangalore; ceded, in 1799, to Great Britain.

MULL, a large island situated on the western coast of Scotland, and included within the county of Argyre, from the main land of which it is separated on the north-east by a narrow channel, called the Sound of Mull; and on the south-east by the large bay opening from the south into the Linnhe-loch. On the western parts, and on the south, it is washed by numerous bays formed by the Atlantic ocean, and every where interspersed with small islands, of which the celebrated Icolm-kil is the most remarkable. This island measures from east to west about twenty-four miles, and from north to south nearly the same extent, and comprehends three parochial districts; Kilfinichen, Kilninien, and Torofay. Its superficial contents, however, are by no means equal to a square of that magnitude, owing to the many indentations of the sea, particularly on its western side. The coast here is, for the most part, bold and rocky; and the face of the country generally exhibits a series of mountains, some of them rising to a considerable height. The most elevated are the "Bien-More," or the "Great Mountain;" and "Bientalindh," or "Prospect Mountain;" both of which command very extensive sea-views.

In this peculiarity of country, as may be supposed, agriculture is little attended to, and indeed almost the only parts of the island under cultivation, are some detached strips of land near the shore. Some of the mountains form excellent sheep-walks, and to this purpose they are accordingly applied. All the other portions of the island, not covered with wood or swampy morasses, are devoted to the feeding of cattle, of which great numbers are annually reared and exported. These cattle are chiefly, if not entirely, of the black native species; and the sale of them constitutes the principal mode whereby the tenants are enabled to procure money for the payment of their rents. Such of them as are unable to effect that object in this way are generally compelled to leave their homes, after they have sown their little arable spots, to seek work in the more southern districts, whence they return before harvest, with a trifling pittance saved from their hard-earned wages. As there are few inclosures in the island, either to separate the grazing farms from each other, or to protect the arable fields from the depredations of the cattle, a number of persons are necessarily employed in the capacity of herds, who lead a life of great sloth and inactivity. They are, nevertheless, a hardy and vigorous race, much attached to their native soil, and furnish many excellent soldiers for the royal service. The only kinds of corn sown here are oats and barley; the former affording very indifferent crops, and the latter much more luxuriant ones than is usual in the western islands. The oats are generally made into meal; but the greatest part of the barley is distilled into whiskey, in spite of the constant efforts of the excise to prevent its manufacture. Sea-ware and shell-sand are much used as manure, and are carried to the fields on the backs of horses in baskets, and in creels. All the implements of husbandry are extremely rude, and probably the same that have been employed during several centuries past; for as there are no regular plough or harrow-makers in the island, each farmer constructs his own, after the manner of his forefathers.

Of the villages in Mull, the only one worthy of notice is Tober-Moray, which stands close to the shore, near the northern extremity of the Sound. This village was built by the British Society for the Encouragement of the Fisheries, in 1788, and might soon be improved into one of the chief sea-ports on the western coast of Scotland, as it possesses a  
fine



fine bay completely sheltered from the ocean by the small island of Calve; and lies directly in the track of the numerous vessels which pass from the more southern ports to the northern countries of Europe. At present, however, it does not contain above thirty houses built of stone and lime; besides, perhaps, nearly double that number of small thatched huts. The inhabitants principally either hold situations in the post-office or custom-house, or are employed in some capacity connected with, or dependent on, the herring fisheries.

Of the landed property in Mull, the greater proportion belongs to the representative of the ancient family of the M'Leans, but a considerable part of it is likewise in the possession of the duke of Argyle. Torloigh, the residence of Mr. M'Lean, is the only mansion of note in the whole island. Castle-Duart, the seat of his powerful ancestors, which stood on a bold head-land projecting into the sea, is now wholly in ruins; as is also Castle-Aros, or Aras, said to have been long the residence of the M'Donalds, lords of the isles.

But what chiefly demands attention in an account of this island, is its mineralogy. The substratum, throughout a great extent, is a mass of whin-stone, only different from basalt, which also frequently occurs, in the greater coarseness of its grain. Some of the basalt assumes a regular columnar form. Near Aros are some rocks of white lava, and apparently of the same kind with that described by M. Dolomieu, in his "Memoires sur l'Isle de Ponces." Lime-stone is extremely abundant, and in some places is of so fine a quality as to resemble marble, and to be capable of a fine polish. Coal has been discovered in considerable quantity, but so situated as to render it impracticable to be worked with any prospect of advantage. Hence the investigation of the strata of the island is more an object of curiosity to the mineralogist, than of utility to the practical miner. In one spot a stratum of coal is discovered immediately "under basalt; and in another basalt incumbent on that mineral; perhaps the only instance of the kind in the world." The mountain called Ben-Enich contains a very uncommon mineral substance, a zeolite, or compound siliceous spar impregnated with petroleum. Sand-stone, and granite of an excellent grain, are very plentiful, and the shore abounds with pebbles of great variety and beauty. At Balphetrish is the celebrated "Ringing Stone;" which measures seven feet long, by six broad; and is four and a half feet in thickness. This stone is of a dark grey colour, spotted with stars of black mica, and totally different from the surrounding rocks. It is so hard, that any attempt to break off the smallest fragment by the most vigorous strokes of a common hammer would be entirely vain; and when so struck it yields a sound like brass, or cast iron. The mineral properties of this curious stone, we believe, have not yet been ascertained. The other mineralogical curiosities in Mull are its caverns, which, though some have questioned the opinion, are, doubtless, natural excavations. Of these, two in the district of Airdmeanach are particularly deserving of notice. One, called "Ladder-Cave," is capable of containing about eighty men, and has a breast-work built at its entrance, to which a passage leads up the rock, where two men only can walk abreast. In this cave, tradition says, that the inhabitants anciently took shelter in times of danger. The other, called "M'Kinnen's Cave," is much more capacious than Ladder-Cave, and is commonly supposed to have taken its designation from a gentleman, named M'Kinnen, who went to explore it, and was never afterwards heard of. At that time it was generally thought to reach quite across the country; but this idea has been

long since found to be erroneous, every part of it having been examined, and its dimensions determined by succeeding adventurers. If, therefore, there is any truth in the story of M'Kinnen, he must either have perished from some accidental cause, or have been murdered by persons who had taken shelter in the cave, and considered him as a dangerous spy or intruder.

The common language of Mull is the Gaelic, or Erse, but a number of persons also speak English, and, no doubt, if proper encouragement was given to the parish schools, the latter would soon become almost universal. Unhappily, however, it happens here, as in many other highland districts, that the stipend of a schoolmaster is scarcely equal to the wages of the meanest labourer; and hence it may be conjectured, that few persons of any ability will devote their time and acquisitions to such unprofitable employment, as taking the charge of education in a country, where their utmost efforts are inadequate to afford the most ordinary sustenance of life. The stated ferries to this island are two in number: one to Morven, and the other from Auchnarraig to Kerner, and from thence to the mainland near Oban.

Mull has, no doubt, been the scene of some severe conflicts in ancient times, which, however, for the most part, were of too little general importance to find a place in the page of Scottish or English history. Bloody-bay, according to tradition, is so called from a sea-fight between a M'Donald of the isles, and his son. The father was supported in this contest by the brave Hector Obhar M'Lean, who afterwards died so gloriously in the field of Flodden, covering his monarch, James IV., from the arrows of the English archers. In 1588, the Florida, one of Philip's invincible Armada, was blown up in "Tober-Moire" bay, after the dispersion of the fleet, as some assert, by the desperate resolution of a Scotchman; and in the same bay did the unfortunate earl of Argyle effect his first landing, attended by a few friends, when he invaded Scotland, with the view of supporting the cause of the duke of Monmouth. Beauties of Scotland, vol. v. 8vo. Pennant's Tour in Scotland, vol. ii. 4to.

*MULL of Galloway.* See GALLOWAY.

*MULL Sound*, a narrow sea between the island of Mull and the continent of Scotland.

*MULL of Kinbo*, the S. extremity of the island of Ilay. N. lat. 55° 40'. W. long. 6° 9'.

*MULLA*, a town of Sweden, in the government of Abo; 56 miles S.E. of Biornesborg.—*Allo*, a town of Hindoostan, in Lahore; 24 miles N.W. of Rotas.

*MULLAGHCARN*, a mountain of Ireland, in the county of Tyrone, a few miles north of Omagh, the county-town.

*MULLALA*, mountains of Ireland, in the county of Leitrim, W. of lough Macnean, and on the border of the county of Fermanagh.

*MULLAOW*, a town of Hindoostan, in Guzerat; ten miles N. of Champaneer.

*MULLARGUR*, a town of Hindoostan, in the circar of Chanderee; 15 miles N.W. of Kinalassa.

*MULLAVELLY*, a town of Hindoostan, in Mysore; taken by the British under the marquis of Cornwallis.

*MULLAWAR*, a town of Hindoostan, in the circar of Bilah; 35 miles N.W. of Bilah.

*MULLEIN*, in *Botany* and the *Materia Medica*. See VERBASCUM.

*MULLEIN*, the common name provincially applied to a biennial plant, which perishes soon after it has perfected its seed. The leaves spread on the ground are nine or ten inches long, and six broad, very woolly, of a yellowish-white colour,



lonr, and very little footstalk. The stem rises four or five feet high, and the upper part of it is garnished with yellow flowers, which sit very close, and form a thick spike. These flowers have an agreeable odour, appear in July, and the seeds ripen in autumn. It commonly grows on the sides of roads, and on banks; but when it once gets into the fields in a warm exposure, and is suffered to seed there, it soon over-runs the whole ground. It may be easily destroyed by cutting off the stem, when it is in a flowering state.

MULLEN'S BAY, in *Geography*, a bay on the coast of Yucatan. N. lat.  $18^{\circ} 15'$ . W. long.  $89^{\circ} 17'$ .

MULLEN'S *Island*, a small island in the gulf of Mexico, near the coast of East Florida. N. lat.  $28^{\circ} 1'$ . W. long.  $82^{\circ} 55'$ .

MULLER, ANDREW, in *Biography*, a celebrated German writer, a native of Pomerania, was born in 1630. At the age of sixteen he was sent to the university of Rostock, and became in a short time distinguished for his compositions in the Hebrew, Greek, and Latin poetry. After this he studied at Königsberg and Wittemberg, and became so completely master of the Oriental languages, that he was invited to England by Walton, to assist him in his famous Polyglott bible, on which, and on Castelli's Lexicon, he laboured with incredible diligence for the space of ten years. After his return to Germany, he became inspector at Bernau, and provost at Berlin. He found the duties of these offices incompatible with his oriental studies, resigned them in a short time, and devoted himself wholly to his favourite pursuits. At Stettin, whither he retired, he published, with observations, specimens of the Lord's Prayer, in sixty-six alphabets. He was intimately acquainted with the Chinese, and promised to draw up a *Clavis Sinica*, which he thought would enable a person of ordinary capacity to read Chinese and Japanese books in the course of a few months. This work never appeared, and it is believed he burnt the MS., with many others, during a fit of sickness attended with delirium. He died in 1694, and by his last will bequeathed his Chinese printing materials to the library at Berlin. He was author of many very learned works; of these the titles of the following may be noted: "*Abd'al'æ Beidavei Historia Sinensis Persicæ et Latine cum notis*;" "*Monumentum Sinicum cum Commentario novensili*;" "*Hebdomas Observationum Sinicarum*;" "*Æconomia Bibliothecæ Sinicæ*;" "*Symbola Syriaca, cum duabus Dissertationibus*." Some of his works were collected together and published in 1695, with the title of "*Mulleri Opuscula nonnulla Orientalia*." It is recorded of him that he was so attached to his books, that he would not leave them for a moment to witness the great cavalcade, on the entry of Charles II. into London, that passed by his window. We have heard of a similar instance in two philosophers, who refused to cross the room to behold a much more splendid, and to Englishmen interesting spectacle, *viz.* the funeral of the immortal Nelson. Gen-Biog.

MULLER, GERHARD-FREDERIC, a celebrated German, known as well for his travels as his writings, was born in 1705, in Herforden, in Westphalia, where he received the early part of his education under his father; at the age of seventeen he was sent to the university of Rinteln, where he resided a year, and then removed to Leipzig. Here he so distinguished himself, that he was recommended by professor Mencke as an adjunct in the historical class of the academy founded at Petersburg by Peter the Great. He accordingly set out for that city, and was some time employed in teaching the higher classes in the Latin language, geography, and history: he was then appointed assistant secretary to the institution; in 1728 he was made under librarian to the

imperial library, and in 1730 he was chosen professor of history. He now applied for leave of absence, in order to gratify his wish of seeing foreign countries. In the year 1731 he visited London, and was elected a fellow of the Royal Society, and on his return to Petersburg, he read lectures privately, till he was appointed to accompany Gmelin and De l'Isle de la Croycere on their travels through Siberia. The business assigned to Muller in this expedition was to collect every fact new and curious relating to the geography and antiquities of the country, as well as the history of the different tribes by which it is inhabited. On his return, he wrote an accurate account of his journey; traced out their various routes; wrote geographical, historical, and political descriptions of all the towns; examined their records, and took extracts from them, which formed 50 vols. folio. He likewise acted as secretary to the expedition, and assisted Gmelin in collecting objects of natural history. They set out on their travels in August 1733, and did not return till February 1743, during which time they had travelled 4480 German miles, or more than three times that number of English miles. An account of their travels was published by Gmelin (see his article, vol. xvi.) in four volumes, 8vo. After this, Muller, who was not rewarded in any degree equal to the labours and sufferings which he had undergone, remained in Russia, struggling with poverty and other evils necessarily attached to untoward circumstances. He undertook, at the desire of prince Jusupof, "*A Dissertation on the Trade of Siberia*," which, though written, or at least begun, in 1744, was not published till 1750, and then only the first part. In 1747, he was appointed historiographer of the Russian empire, and in 1754 he was nominated by the president to be the secretary of the Academy of Sciences, and was employed in superintending the publication of their transactions, and in other literary undertakings. In 1763, he was appointed director of the school for foundlings, established by Catharine at Moscow, and in 1766, he was appointed keeper of the archives in that city, now (1813) alas! no more, with an additional salary of 1000 roubles. From this period till his death, which took place in 1783, he devoted himself entirely to the pursuits of literature, having been previously raised to the rank of counsellor of state, and invested with the order of Wladimir. Mr. Coxe, in his Travels, vol. i. in speaking of Muller, who was then living, says, "He collected during his travels the most ample materials for the history and geography of this extensive empire, which was scarcely known to the Russians themselves before his valuable researches were given to the world in various publications. His principal work is '*A Collection of Russian Histories*,' in nine volumes octavo, printed at different intervals at the press of the Imperial Academy of Sciences. The first part came out in 1732, and the last in 1764. This storehouse of information and literature in regard to the antiquities, history, geography, and commerce of Russia, and many of the neighbouring countries, conveys the most indisputable proofs of the author's learning, diligence, and fidelity. To this work the accurate and indefatigable author has successively added many other valuable performances upon similar subjects, both in the German and Russian languages, which elucidate various parts in the history of this empire.

"Mr. Muller speaks and writes the German, Russian, French and Latin tongues with surprising fluency; and reads the English, Dutch, Swedish, Danish, and Greek, with great facility. His memory is still surprising; and his accurate acquaintance with the minutest incidents of the Russian annals almost surpasses belief. His collection of state papers and manuscripts is invaluable: they are all arranged in the exactest order, and classed into several volumes, distinguished by



by the names of those illustrious personages to whom they principally relate; such as Peter I., Catharine I., Menzikoſ, Otterman, &c."

MULLER, JOHN, commonly known by the name of Regiomontanus, from Mons Regius, or Königsberg, a town in Franconia, where he was born in 1436. Having acquired a good claſſical education in his own country, he was admitted very young into the academy of Leipſic, where he formed a ſtrong attachment to the mathematics, and thoſe other branches of knowledge connected with them. At this early period he felt that the aſſiſtance he obtained at Leipſic was not equal to his expectations, and he removed at the age of fifteen to Vienna, to ſtudy under the famous Purbach. A ſtrong attachment was formed between theſe two, and Muller made ſuch a rapid progreſs in the ſciences, that he was ſoon able to aſſiſt his maſter, and become the companion of his labours. They ſpent ten years together in elucidating obſcurities, obſerving the motions of the heavenly bodies, and comparing and correcting the tables of them. While they were thus employed, cardinal Beſſarion applied to Purbach to tranſlate the *Almageſt* of Ptolemy into the Latin language, which with the aſſiſtance of Muller he began: before, however, they had proceeded far in their labours, Purbach died, and the whole taſk fell upon his pupil, companion, and aſſociate, which he completed at Rome, whither he accompanied the cardinal. While in the metropolis of the ancient world he applied himſelf with great diligence to the ſtudy of the Greek language, and examined the rich ſtores of learning in the public libraries. He did not, however, neglect his mathematical purſuits, and continued with great eagerneſs his aſtronomical obſervations. In 1463 he went to Padua, became a member of the univerſity there, and delivered a courſe of lectures to a very numerous auditory. In the following year he removed to Venice, and wrote his "Treatiſe of Triangles," and a refutation of the quadrature of the circle, which cardinal Cuſan thought he had demonſtrated. The ſame year he returned with Beſſarion to Rome, where he copied ſeveral books which, from their high coſt or great rarity, he could not purchaſe, meaning hereafter to tranſlate and publiſh ſome of them in Germany. Having finiſhed what he intended to do in this way he returned to Vienna, and performed for ſome time the duties of his profeſſorſhip. After this he went, at the invitation of Matthias, king of Hungary, to Buda, and from thence to Nuremberg, where he fixed his reſidence, and ſet up a printing-houſe, in order to print and publiſh his own works, in which he was aſſiſted by the celebrated Bernard Walther. Here he publiſhed the "New Theories" of Purbach; the "Aſtronomicon" of Manilius; his own "Calendar;" "Ephemerides," &c. He likewiſe prepared a new verſion of Ptolemy's *Cosmography*; and publiſhed Commentaries on the *Almageſt*, which cardinal Beſſarion ſaid was worth a whole province. Having had good opportunities for making obſervations on two comets in 1471 and 1472, he publiſhed a treatiſe, entitled "Concerning the true Place and Magnitude of Comets." In 1474 pope Sixtus IV. conceived a deſign of reforming the calendar, and ſent for Regiomontanus to Rome, as the moſt able perſon to accompliſh his purpoſe. The philoſopher was exceedingly unwilling to leave his own purſuits, but having received the moſt magnificent promiſes from his holineſs, who alſo nominated him biſhop of Ratiſbon, he ſet out, and arrived at Rome in 1475, but died the following year, at the age of forty. He was buried in the Pantheon, and his memory was celebrated by the beſt poets of the time. It may be obſerved that Purbach was the firſt mathematician who reduced the trigonometrical tables of ſines to the decimal ſcale. This project was perfected by

Regiomontanus, who not only extended the ſines to every minute, the radius being 600,000, as deſigned by Purbach, but afterwards computed them to the radius of 1,000,000 for every minute of the quadrant. He alſo introduced the tangents into trigonometry, and enriched this part of ſcience with many theorems and precepts. His "Treatiſe on plane and ſpherical Trigonometry" conſiſts of five books; in the fifth are various problems concerning rectilinear triangles, ſome of which are reſolved by means of algebra. Regiomontanus was author of other works beſides thoſe already mentioned: and of his mechanical projects, we are told by Peter Ramus, that in his workſhop at Nuremberg there was an automaton in perpetual motion: that he made an artificial fly, which taking its flight from his hand, would fly round the room, and at laſt return to his maſter's hand: that he fabricated an eagle, which, on the emperor's approach to the city, he ſent out, high in the air, a conſiderable diſtance to meet him, and that it kept him company to the very gates of the city. "Let us no more wonder," adds Ramus, "at the dove of Archytas, ſince Nuremberg can ſhew a fly and an eagle armed with geometrical wings."

MULLER, HENRY, a learned German Lutheran divine and profeſſor, was born at Lubeck in 1631. He began the ſtudy of Oriental literature and philoſophy at Roſtock, and in 1647 he was ſent to the univerſity of Grypſwalde, in Pomerania, where he continued three years. In 1651 he was admitted to the degree of maſter of philoſophy, after which he ſpent about two years in augmenting his ſtock of knowledge at the univerſities of Leipſic and Wittemberg. In 1653 he came to Roſtock, and was promoted by the ſenate to the dignity of archdeacon. Six years after this he was appointed Greek profeſſor in the univerſity, and in 1660 he received the degree of doctor of divinity at Helmſtadt. In 1662 he was choſen paſtor of St. Mary's Hamburgh, and nominated profeſſor of divinity in that city, an office which he held with great reputation about eight years. At Roſtock he thrice filled the poſt of rector of the univerſity. He died at the age of forty-four, in the year 1675. His principal works are, "Harmonia Veteris et Novi Teſtamenti;" "Theologia Scholaſtica;" "Orator Eccleſiaſticus." Beſides theſe he publiſhed ſeveral others, controversial, practical, and devotional. Moreri.

MULLER, or Mullar, denotes a ſtone flat and even at bottom, but round at top; uſed for grinding of matters on a marble.

The apothecaries uſe mullers to prepare many of their terreſtreous powders; and painters for their colours, either dry or in oil.

MULLER is an inſtrument uſed by the glaſs-grinders: being a piece of wood, to one end of which is cemented the glaſs to be ground, whether convex, in a baſon; or concave, in a ſphere or bowl.

The muller is ordinarily about ſix inches long, turned round: the cement they uſe is compoſed of aſhes and pitch. See GRINDING.

MULLER, in *Ichthyology*, a name uſed by ſome for the fiſh called in Latin the *cataphraſtus*, and in Engliſh the *mailed fiſh*, or *poſſe*.

MULLERA, in *Botany*, received its name from the younger Linnæus in honour of Otho Frederick Muller, author of the *Flora Fridrichſdalina*, and continuator of the *Flora Danica* after its original author, Oeder, declined it. Muller furniſhed various traſacts on natural hiſtory for the Daniſh Society's Tranſactions, and died at Cöpenhagen in 1784, at the age of 54.—Linn. Suppl. 53. Schreb. 499. Willd. Sp. Pl. v. 3. 1128. Mart. Mill. Dict. v. 3. Juſſ. 352. (Coublandia;



(Coublandia; Aubl. Guian. 937. Juff. 352.)—Class and order, *Diadelpbia Decandria*. Nat. Ord. *Papilionaceæ*, Linn. *Leguminosæ*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-shaped, compressed, truncated, and flattish at the base, with four teeth; the uppermost obliterated, rarely cloven; the two lateral ones more distant, acute; the lower more produced and more awl-shaped. *Cor.* papilionaceous; standard reflexed, heart-shaped, ovate, entire, obtuse, flat, with a flattish claw scarcely longer than the calyx, remote from the wings and keel; wings oblong, close, gibbous at the base, unguiculated; keel shorter than the wings, composed of two, distinct, close, unguiculated petals, forming an oblong, compressed, straight sheath. *Stam.* Filaments ten, united into a compressed sheath, broader at the base; anthers ovate. *Pist.* Germen superior, linear, compressed; style short; stigma acute. *Peric.* Legume bead-shaped, composed of three, four, or five globules, which form a sort of chain, and are firm, single-seeded, of one cell and one valve, the lowermost gradually larger. *Seeds* solitary, compressed, kidney-shaped, smooth.

Eff. Ch. Calyx four-toothed. Legumes elongated, of several, single-seeded, fleshy, globular cells, connected by thread-shaped portions.

1. *M. moniliformis*. Beaded Mullera. Linn. Suppl. 329. Merian. Surinam. t. 35. (Coublandia frutescens; Aubl. Guian. t. 356.)—Native of Surinam and Cayenne, in moist situations, where it is in flower and fruit nearly throughout the year. The trunk of this tree rises to the height of five or six feet, with rusty-coloured, somewhat warty branches. Leaves alternate, pinnate, composed of two pairs of leaflets with an odd one; leaflets opposite, on stalks, ovate-oblong, like those of Privet, entire, acute, smooth above, silky beneath, flat, veiny. Flowers in axillary and terminal, simple clusters, nodding, pink-coloured, the size of Laburnum blossoms.

The fruit of this plant, which the younger Linnæus has described as very wonderful, is nearly allied to some plants that have been confounded under *Sophora*, particularly the *EDWARDSIA* of Mr. Salisbury; see that article.

MULLET, in *Geography*, a peninsula of Ireland, in the county of Mayo, on the western coast. It is about nine miles long from Urris Head to Blacksod Point, and in general about two wide, though in some parts it is not a quarter of a mile across. Dr. Beaufort says that it is reported to be fertile, pleasant, and well inhabited; but no good account of it has been yet published.

MULLET, in *Ichthyology*, a name given in England, indeterminate, to several kinds of fish, of different genera; but the proper sense of the word is the same with that of the mugil, or cephalus, of the generality of authors; the cephalus of Aristotle and the Greeks; and the cestreus or cestrea of Oppian and others. See MUGIL.

Mullets are found in great plenty on several of the sandy coasts of our island, and haunt in particular those small bays that have influxes of fresh water. They come in great shoals, and keep rooting like hogs in the sand or mud, leaving their traces in form of large round holes. They are very cunning; and when surrounded with a net, the whole shoal frequently elapses by leaping over it; for when one takes the lead, the others are sure to follow. This fish was sometimes made the instrument of a horrible punishment for unfortunate gallants; and was in use both at Athens and Rome. "Legibus Atheniensium adulteri in egro deprehensi pœna fuit παφροδοσις. Raphani loco utebantur nonnunquam mugile pisce, interdum scorpiione." Causabon. Animadv. in Athe-

næum. lib. i. Juvenal Satire x. v. 316. and Horace Satire ii. lib. i. v. 132. refer to this punishment. Pennant.

MULLET, *Black, mugil niger*, a name given by authors to a fish of the mullet kind, but all over black, more usually known by the name of the *portius piscis*.

MULLET, *Winged, mugil alatus*, a name given by some authors to the *hirundo piscis*, or swallow-fish, as, excepting its wing-fins, it very much resembles the mullet in shape. See FLYING-fish.

MULLET, in *Ornithology*, a name by which the people in some counties of England called the *anas arctica Clusii*. See DUCK.

MULLET, or *Mellet*, in *Heraldry*, a bearing in form of a flat, or rather of the rowel of a spur, which it originally represented.

The mullet has but five points; when there are six, it is called a *fiar*. Though others make this difference, that the mullet is, or ought to be, always pierced, which a star is not.

The mullet is usually the difference, or distinguishing mark for the fourth son, or third brother, or house.

Though it is often also borne alone, as coat-armour: thus, ruby on a chief pearl, two mullets diamond, was the coat of the famous lord Verulam, first sir Francis Bacon.

MULLICKPOUR, in *Geography*, a town of Bengal, 16 miles E. of Hoogly.—Also, a town of Bengal, 25 miles N.E. of Calcutta.

MULLICO HILL, a town of America, in Gloucester county, New Jersey; 163 miles from Washington.

MULLICUS RIVER, a small river of America, in New Jersey, upon which are many mills and iron-works, emptying itself into Little Egg harbour bay, four miles E. of the town of Leeds, and navigable 20 miles for vessels of 60 tons.

MULLIEBANG, a town of Bengal, on the left bank of the Ganges, opposite to Hoogly.

MULLINCOTTA, a town of Hindoostan, in the Carnatic; 15 miles S.E. of Tinevelly.

MULLINGAR, a post-town of Ireland, in the county of Westmeath, of which it is the shire town. It is a large well-built town, situated on a river issuing out of lough Hoyle. There is a wool fair held here, but it is not as much frequented as formerly, in consequence of that held at Ballinasloe. It formerly returned two members to parliament, but this privilege ceased at the union. Mullingar is 38 miles W. by N. from Dublin. N. lat. 53° 31'. W. long. 7° 18'.

MULLIONS, in *Pointed Architecture*, are all those parts of windows which divide the light into compartments, and are either curved or straight. See GOTHIC Architecture.

Vertical mullions are called *munions*; and those which run horizontally are called *transoms*. The whole of the mullions of a window above the springing of the arch is called the *head-work*.

MULLOCK, in *Agriculture*, a provincial term applied to dirt or rubbish of any kind.

MULLOOIAH, MULLUVIA, anciently *Malva*, *Molochath*, or *Mulucha*, in *Geography*, a river of Africa (see MAURITANIA), which rises at the foot of the Atlas, between Morocco and Sugulmessa, and runs into the Mediterranean. N. lat. 34° 55'. W. long. 2° 6'. It separates Morocco from the province of Tremecen, and in its whole course runs from S. to N. about 200 miles, and is navigable only for small vessels.

MULLUNG, a town of Bengal; eight miles S. of Rungpour.

MULLUS,



**MULLUS**, the Surmullet, in *Ichthyology*, a genus of fishes of the order Thoracici, of which the generic character is, head compressed, sloping, scaly; eyes oblong, approximate, vertical, furnished with a nictitating membrane; nostrils double, minute; jaws and palate armed with small teeth; tongue short, narrow, smooth, fixed; gill-membrane three-rayed; the covers of three pieces, very finely striate; body round, long, red, coated with large scales, easily dropping off. Gmelin mentions six species only, but Dr. Shaw describes thirteen; we shall first notice those given by the former, and then briefly speak of the others.

#### Species.

\* **BARBATUS**, called also Mullus Ruber, or the red surmullet, has its lower jaw with two cirri; its body is red; it is principally found in the Mediterranean and Northern seas, where it comes to the length of 12 or 15 inches. Its colour is an elegant rose red, tinged with olive colour on the back, and a silvery cast towards the abdomen; the scales are thin, and easily separated, and when rubbed off, the skin is still of a brighter red than it was before. It is strong and active, and feeds chiefly on the smaller fishes, worms, and sea-insects. It is said nothing can exhibit a more beautiful sight, than the colours of this fish when it is in the act of dying, and its flesh is esteemed very delicious; the Romans held it in such high repute that prodigious sums of money were given for them.

\* **SURMULETUS**; Striped Surmullet. This species has likewise two cirri, and the body is marked with four longitudinal lines. It inhabits the European, American, and Mediterranean seas; it is found of all sizes, from four inches to a foot long; the scales are silvery, streaked with tawny; it feeds on other fishes, testaceous animals, crabs, and dead carcases, is gregarious, and approaches the shore in the spring, for the purpose of spawning: as an article of food it is equally esteemed with the other.

**JAPONICUS**; Japanese Surmullet. Yellow without stripes; the tail is forked, and it has two cirri. It is, as its name imports, found in the seas about the island of Japan, is about six inches long, and can scarcely be distinguished from the *M. barbatus*. The jaws are without teeth.

**AURIFLAMMA**; Orisflamme Surmullet. Two cirri, white; each side has a tawny stripe; tail is yellow. It inhabits the Red sea: the scales are membranaceous at the edge. It is about ten inches long; the colour is a gilded brown, paler beneath, with a longitudinal stripe on each side the body of an orisflamme or fulvous tint, situated above the lateral line, and accompanied by a dusky spot near the base of the tail, which, together with the dorsal fin, is yellow; the other fins are whitish.

**VITTATUS**; Banded Surmullet. Two cirri; body with two brown and three yellow stripes on each side; the tail is obliquely brown. It inhabits the Red sea; the body is lanceolate white; scales finely toothed, with obsolete elevated rivulets. The jaws are crowded with teeth at the edges.

**IMBERBIS**; Beardless Surmullet. Lower jaw without cirri; a native of the Mediterranean, particularly near the island of Malta. The mouth is wide; it differs from the rest of the genus in wanting the cirri beneath the lower lip.

**INDICUS**; Indian Surmullet. The body above purple, whitish below, and marked on each side by two spots. Its size and habit are the same as those of the red surmullet: in the living fish the colour is extremely beautiful, but it fades very quickly after death; the upper part of the head, and back, dark changeable purple, growing faint on the sides, which are marked by a few longitudinal azure and golden

lines, and by two oblong spots on each side. It is a native of the Indian seas, was observed by Dr. Russell near Visgapatam: as food it is much inferior to the *M. barbatus*.

**BANDI**. Whitish, with two longitudinal yellow bands on each side; it is about six inches long; the body is white, with two yellow fillets on each side from the gills to the tail; breast and belly greenish-white; dorsal and caudal fin streaked obliquely with yellow and dusky lines; ventral and anal greenish-white; inhabits the river near Visgapatam.

**TRIFASCIATUS**. With three transverse brown bands on each side. It is a native of the Indian seas, and possessed of habits similar to those of the rest of the genus.

**BIFASCIATUS**. With two transverse brown bands on each side. Body marked by two deep or dusky transverse bands, each terminating in a point towards the abdomen; its beards are rather short; inhabits the Indian seas.

**MACULATUS**; Spotted Surmullet. Body marked on each side by three rounded black spots; shape, rather more in length than in the rest of the genus; colour of the whole fish bright red, with three large round black spots along each side. It is a native of the Brazilian seas.

**RADIATUS**. The orbits radiated with yellow, and a deep yellow spot towards the end of the back; the second dorsal and anal fins are marked with oblique yellow streaks; it is a native of the Indian seas.

**AUREOVITTATUS**; Gold-striped Surmullet. The body brownish-blue above, whitish beneath, and marked on each side by a longitudinal gold-coloured line; the tail and tips of the dorsal fins are yellow; it is a native of the Indian seas.

**MULLYNE**, in *Geography*, a town of Hindoostan, in Oude; 42 miles W.N.W. of Lucknow. N. lat. 27° 10'. E. long. 80° 31'.

**MULNA SHADDY**, a town of Candahar; 35 miles E.N.E. of Suffa.

**MULNAPOUR**, a town of Bengal; 25 miles S.E. of Purneah.—Also, a town of Hindoostan, in Oude; 15 miles S.W. of Goorackpour. N. lat. 26° 38'. E. long. 83° 28'.

**MULNITZA**, a town of Croatia; 10 miles N. of Bihacs.

**MULOSLAVSKICH**, a town of Russia, in the government of Irkutsk, on the Angara; 36 miles N. of Balganskoi.

**MULREA**, mountains of the county of Mayo, Ireland, north of the Killeries, and about 23 miles S.W. from Castlebar.

**MULROSE**, a town of Brandenburg, in the Middle Mark, seated on a canal made from the Spree to the Oder; nine miles S.W. of Francfort. N. lat. 52° 17'. E. long. 14° 32'.

**MULROY BAY**, a bay on the north coast of Ireland, in the county of Donegal. It has water sufficiently deep in the anchorage for the largest ships, and is well sheltered there from all winds; but a part of the channel that leads to it is narrow and difficult, and therefore not fit for large ships that cannot be easily managed. Lough Swilly, which is very near it, is so much superior as a harbour, that Mulroy is not much used.

**MULSUM**, **MULSE**, a liquor made of wine and honey; or even of honey and water. See **HYDROMEL**.

**MULTA**, **MULTURA**, *episcopi*, a fine or final satisfaction, anciently given the king by the bishops, that they might have power to make their last wills; and that they might have the probate of other men's, and the granting of administrations.

**MULTANGULAR**, in *Geometry*, a figure or body, which has many angles.



MULTENEN, in *Geography*, a town of Prussia, in the province of Natangen; 40 miles S.E. of Königsberg.

MULTIFERNAN, or MULTIFARNHAM, a village of the county of Westmeath, Ireland, on the river Gaine, and near lough Derveragh, where there was a celebrated monastery. Some ruins of the abbey still remain. It is seven miles N. from Mullingar, and 45 W.N.W. from Dublin.

MULTIFIDUS SPINÆ, in *Anatomy*, a muscle of the vertebral column, the transverse epineux of Winslow, transverso-spiniens of Dumas.

It is a muscle of an elongated figure, placed at the side of the spinous processes, in immediate contact with the vertebrae, and contributing to fill up the channel left on each side of the spine at its posterior aspect. It consists of a series of muscular fasciculi of unequal length, placed one above the other, extending obliquely from the transverse to the spinous processes, from the sacrum to the second vertebra of the neck, and differing in volume in the different regions of the spine. The length of its fibres is not at all equal to the length of the muscle; as the former pass from the transverse to the spinous processes of the neighbouring vertebrae; but they are continuous throughout the whole length, so as to compose one muscle.

In the sacral and lumbar regions it arises, in the first, from the inequalities of the posterior surface of the sacrum by short aponeuroses, and from the common aponeurosis, which gives origin to the sacrolumbalis and longissimus dorsi; in the second, from the articular processes by long and distinct aponeurotic laminae. The fleshy fibres are directed upwards and inwards, and are inserted, those of the first origin, in the spinous processes of the last lumbar vertebrae, those of the second, in the same processes of the upper lumbar and lower dorsal vertebrae, by a mixture of aponeurotic and fleshy fibres. The superficial fasciculi go from a transverse process to the points of the spinous processes of the third or fourth vertebra above it; the more deeply seated, which become shorter and shorter, pass from one vertebra to that immediately above it, towards the base of the spinous process or the plate at its root.

The muscle is slender in the back, and consists of long superficial fasciculi, which ascend from the eight or nine last dorsal transverse processes, to the points of the eight or nine upper spinous processes of the same region; and of shorter deep-seated fibres, which are extended from the roots of the transverse to the bases and laminae of the spinous processes. They arise and are inserted by aponeurotic fibres.

In the cervical region we meet, first, with a very long, distinct, and often almost isolated superficial fasciculus, composed of others, which arise from the superior dorsal transverse processes, are inserted into the six last spinous processes, and end in a point at the vertebra dentata. Under this are shorter fasciculi, passing from the bases of the transverse processes of the upper dorsal, and from the articular processes of the five lower cervical vertebrae, to the bases and laminae of the cervical spinous processes. Distinct aponeuroses are observed at the origin and insertion of each fasciculus.

This muscle is in contact with the spinous processes, and moreover with the interspinales muscles in the neck, the interspinal ligaments in the back and loins, on the inside; in front with the laminae of the spinous processes, with the yellow ligaments uniting there, with the articular and transverse processes, which are points of attachment for it; behind, with the complexus and transversalis colli in the neck, the longissimus and spinalis dorsi in the back and loins.

In this description are included, with the multifidus spinæ, properly so called, the semispinalis colli and semispinalis

dorsi; the distinctions between these three muscles cannot be established without cutting very freely through the fibres. The former includes the longer superficial structure, which we have mentioned in the neck; and the latter the corresponding part in the back.

The action of the multifidus spinæ is that of extending the vertebral column, and moving it laterally. The former effect is produced, when the right and left muscles act together; the latter, when they are exerted separately. As all the fibres are oblique, they draw the spine, when they contract, towards their own side; now, as the force drawing to the right is equal to that which pulls to the left, these balance and mutually destroy each other, and that motion only is produced, in which both the muscles concur; viz. extension, or motion backwards. When the spine has been inclined forwards, either in its whole length, or in any particular region, this muscle assists in restoring the trunk to the erect attitude; and it is constantly exerted in maintaining the body in this attitude. The lumbar and sacral portions fix the lumbar vertebra on the pelvis; this region of the spine, being rendered steady, affords a fixed point for the action of the multifidus spinæ in the lower part of the back, which fixes that part of the back on the loins; and the same observation holds good of the higher portions successively to the top of the spine. Thus the series of small muscles, which form the multifidus, having its first fixed point in the pelvis, which is immoveable, acts successively in such a manner, that each vertebra is the point in which the contractions of an inferior fasciculus end, and from which those of a superior one begin. The superficial fibres must have more power than the deep-seated ones, as they are longer, and farther removed from the centre of motion.

If the muscle of one side acts separately, it will incline the spine laterally, by drawing the spinous towards the transverse processes. The whole will produce this lateral inclination in the entire vertebral column; but any part may act separately on its own region of the spine.

MULTIFORME OS, the os cuboides, one of the bones of the tarsus. See EXTREMITIES.

MULTILATERAL, in *Geometry*, is applied to those figures which have more than four sides or angles, more usually called *polygons*.

MULTINOMIAL, or MULTINOMIAL Roots, in *Algebra*, are such as are composed of many names, parts, or members; as,  $a + b + c + d$ , &c.

For raising an infinite multinomial to any given power, or extracting any given root out of such a power, see a method of M. de Moivre, in *Phil. Trans.* N° 230.

MULTIPLE, MULTIPLEX, in *Arithmetic*, a number which comprehends some other several times.

Thus 6 is a multiple of 2, or, which is the same, 2 is a quota part of 6; 2 being contained in 6 three times. And thus 12 is a multiple of 6, 4, 3, and comprehends the first twice, the second thrice, the third four times, &c.

MULTIPLE Ratio, or *Proportion*, is that which is between multiple numbers.

If the lesser term of a ratio be an aliquot part of the greater, the ratio of the greater to the less is called multiple; and that of the less to the greater, sub-multiple.

A sub-multiple number is that contained in the multiple.

Thus, the numbers 1, 2, and 3, are sub-multiples of 6 and 9.

Duple, triple, &c. ratios; as also sub-duples, sub-triples, &c. are so many species of multiple, and sub-multiple ratios.

MULTIPLE Superparticular Proportion, is when one number or



or quantity contains another more than once, and a certain aliquot part; as  $3\frac{1}{2}$  to one.

**MULTIPLE Superpartient Proportion**, is when one number or quantity contains another diverse times, and some parts besides; as 4. to 1.

**MULTIPLE Echo**. See ECHO.

**MULTIPLICAND**, in *Arithmetic*, is one of the factors in the rule of multiplication, being that number which is given to be multiplied by another called the *multiplicator*, or *multiplier*.

**MULTIPLICATION**, the act of multiplying, or increasing the number of any thing.

Accurately speaking, in every multiplication, the multiplicator must always be considered as a number; and it is easy to conceive a quantity of any kind multiplied by a number. But to talk of a pound multiplied by a pound, a debt by a debt, and a line by a line, &c. is unintelligible. However, by analogy, in the application of algebra to geometry, we meet with such expressions, and nothing is more common than to find  $AB \times BC$ , to denote the rectangle  $ABCD$ , the length of which is  $AB$ , and the breadth  $BC$ . But this is only to be understood by analogy; because, if the number expressing the measure of the side  $AB$  was multiplied by the number expressing the measure of  $BC$ , the product would express the measure of  $ABCD$ .

The sign of multiplication most commonly used among algebraists, is  $\times$ . But the Germans, after Leibnitz, only make use of a point placed between the quantities multiplying each other, thus:  $a.b$  is the same as  $a \times b$  and  $AB.BC$ , the same as  $AB \times BC$ , or the rectangle of  $AB$  into  $BC$ , that is, the rectangle  $ABCD$ .

When the quantities to be multiplied are complex, they place them between a parenthesis instead of drawing a line over them, as we commonly do.

Thus they write  $(a + b) \cdot (c + d)$  instead of  $\overline{a + b} \times \overline{c + d}$ , for the product of  $a + b$  into  $c + d$ . Sometimes the point is omitted, thus:  $(a + b)(c + d) = a + b \times c + d$ .

An old statute says, it is ordained and established, that none from henceforth shall use to multiply gold or silver, nor use the craft of multiplication; and if any the same do, he shall incur the pain of felony. Stat. 5 Hen. IV. cap. 4.

The statute was made on presumption that some persons, skilful in chemistry, could multiply or augment those metals by elixirs, or other ingredients; and change other metals into very gold and silver. Under Henry VI. letters patent were granted to certain persons (who undertook to perform the same, and to find the philosopher's stone), to free them from the penalty in the said statute. But the statute has been since repealed. 1 Will. & Mar. cap. 30.

**MULTIPLICATION**, in *Arithmetic*, the act or art of multiplying one number by another to find the product.

Multiplication, which is the third rule in arithmetic, consists of finding some third number, out of two others given; in which one of the given numbers is contained as often as unity is contained in the other.

Or, multiplication is the finding what will be the sum of any number added to itself, or repeated, as often as there are units in another. So that the multiplication of numbers is a compendious kind of addition.

Thus, the multiplication of 4 by 5 makes 20, *i. e.* four times five amounts to twenty; which algebraists express thus,  $4 \times 5 = 20$ .

In multiplication, the first factor, *i. e.* the number to be

multiplied, or the multiplicand, is placed over that by which it is to be multiplied; and the factum or product under both.

An example or two will make the process of multiplication easy. Suppose I would know the product of 269 multiplied by 8, or 8 times 269.

Multiplicand	-	-	269
Multiplier	-	-	8
			2152
Factum, or product	-	-	2152

The factors being thus disposed, and a line drawn underneath (as in the example), I begin with the multiplicator thus: 8 times 9 make 72, set down 2, and carry 7 tens, as in addition: then 8 times 6 make 48, and 7 I carried, 55; set down 5, and carry 5; lastly, 8 times 2 make 16, and 5 I carried, 21, which I put down: so that coming to number the several figures placed in order, 2, 1, 5, 2, I find the product to be 2152.

Now suppose the factors to express things of different species, *viz.* the multiplicand men, or yards, and the multiplier pounds; the product will be of the same species with the multiplicator. Thus the product of 269 men or yards, multiplied by 8 pounds or pence, is 2152 pounds or pence; so many of these going to the 269, at the rate of 8 a-piece. Hence the great use of multiplication in commerce, &c.

If the multiplicator consists of more than one figure, the whole multiplicand is to be added to itself; first, as often as the right-hand figure of the multiplicator shews, then, as often as the next figure of the multiplicator shews, and so on. Thus  $421 \times 23$  is equal to  $421 \times 3$ , and also  $421 \times 20$ . The product arising from each figure of the multiplicator, multiplied into the whole multiplicand, is to be placed by itself in such a manner, that the first or right-figure thereof, may stand under that figure of the multiplicator from which the said product arises. For instance:

Multiplicand	-	-	421
Multiplier	-	-	23
			1263
Particular product of $421 \times 3$			1263
Particular product of $421 \times 20$			842
			9683
The total product	-	-	9683

This disposition of the right-hand figure of each product follows from the first general rule: the right-hand figure of each product being always of the same denomination with that figure of the multiplicator from which it arises.

Thus, in the example, the figure 2 in the product 842 is of the denomination of tens, as well as the figure 2 in the multiplicator. For  $1 \times 20$  (that is, the 2 of 23) = 20, or 2 put in the place of tens, or second place.

Hence, if either of the factors have one or more cyphers on the right-hand, the multiplication may be performed without regarding the cyphers, till the product of the other figures be found; to which they are to be then affixed on the right. And if the multiplicator have cyphers intermixed, they need not be regarded at all. Instances of each follow:

12	358	1'0	24'00	8013
1   0	6   000	1   0	3   0	5006
12 0	2148 000	10 0	72 000	48078
				40065
				40113078



# MULTIPLICATION.

Thus much for an idea of multiplication, where the multiplier consists wholly of integers; in the praxis of which, it is supposed, the learner is apprised of the product of any of the nine digits multiplied by one another, easily learnt from the common table, or otherwise. Its table is here annexed.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

There are also some abbreviations of this art. Thus, to multiply a number by 5, you need only add a cypher to it, and then halve it. To multiply by 15 do the same, then add both together. The sum is the product.

Expedients for the more easy and expeditious multiplying large sums are *Sliding Rules*, and *Neper's Bones*. (See these articles.) The want of which may be supplied by tabulating the multiplicand.

Where the multiplier is not composed wholly of integers, as it frequently happens in business, where pounds are accompanied with shillings and pence; yards with feet and inches; the method of procedure, if you multiply by a single digit, is the same as in simple numbers, only carry from one denomination to another, as the nature of each species requires. *E. gr.* to multiply 123*l.* 14*s.* 9*d.* 3*q.* by 5: say, 5 × 3*q.* = 15*q.* that is, 3*d.* 3*q.* write down the 3*q.* and proceed, saying 5 × 9 = 45*d.* that is, 3*s.* 9*d.* to which add 3*d.* set down 0, and proceed in the same manner through the rest.

If you multiply by two or more digits, the methods of procedure are as follow: suppose I have bought 37 ells of cloth at 13*l.* 16*s.* 6*d.* per ell, and would know the amount of the whole. I first multiply 37 ells by 13*l.* in the common method of multiplication by integers, leaving the two products without adding them; then multiply the same 37 ells by 16*s.* leaving, in the like manner, the two products without adding them. Lastly, I multiply the same 37 by the 6*d.* the product of which is 222*d.* which, divided by 12 (see DIVISION), gives 18*s.* 6*d.*, and this added to the products of the 16*s.*, the sum will be 610*s.* 6*d.* the amount of 37 ells at 16*s.* 6*d.* the ell. Lastly, the 610*s.* 6*d.* are reduced into pounds by dividing them by 20 (see REDUCTION): upon adding the whole, the amount of 37 ells at 13*l.* 16*s.* 6*d.* will be found as is the following:

37 ells At 13 pounds.	37 ells At 16 shillings.	37 ells At 6 pence.
111	222	222
37	37	
30 10 6	18 6	
Product 511 10 6	610 6	

Or thus: suppose the same question; reduce the 13*l.* 16*s.* into shillings, the amount will be 276*s.* reduce 276*s.* into pence, adding 6, the amount will be 3318*d.* Multiply the 37 ells by 3318, the amount will be 122766*d.*, which divided by 12, and the quotient 10230*s.* 6*d.* reduced into pounds, by cutting off the last figure on the right, and taking half of those on the left, yields 511*l.* 10*s.* 6*d.* the price of the 37 ells, before.

Though by these two methods any multiplication of this kind may be effected, yet the operations being long, we shall add a third much shorter. Suppose the same question: multiply the price by the factors of the multiplier, if resolvable into factors: if not, by those that come nearest it: adding the price for the odd one, or multiplying it by what the factors want of the multiplier. So the work will stand thus: 37 ells at 13*l.* 16*s.* 6*d.* 6 × 6 = 36 + 1 = 37.

Therefore

82	19	0
497	14	0
13	16	6
511	10	6

the price of 37 ells.

But the most commodious is the fourth method, which is performed by aliquot and aliquant parts; where you are to observe by the way, that *aliquot parts* of any thing are those contained several times in it, and which divide without any remainder; and that *aliquant parts* are other parts of the same thing composed of several aliquot parts.

To multiply by *aliquot parts*, is, in effect, only to divide a number by 3, 4, 5, &c. which is done by taking a 3*d.* 4*th.* 5*th.* &c. from the number to be multiplied. Example: To multiply, *v. gr.* by 6*s.* 8*d.* Suppose I have 347 ells of ribband at 6*s.* 8*d.* per ell.

Multiplicand	-	-	347 ells.
Multiplicator	-	-	6 <i>s.</i> 8 <i>d.</i>
Product	-	-	115 <i>l.</i> 13 <i>s.</i> 4 <i>d.</i>

The question being stated, take the multiplier, which, according to the table of aliquot parts, is the third; and say the third of 3 is 1, set down 1; the third of 4 is 1, set down 1, remains 1, that is 1 *ter*, which added to 7 makes 17; the third of 17 is 5, remain 2 units, *i. e.* two-thirds, or 13*s.* 4*d.*, which place after the pounds. Upon numbering the figures 1, 1, and 5, integers, and 13*s.* 4*d.* the aliquot part remaining, I find the sum 115*l.* 13*s.* 4*d.*

For Multiplication by *aliquant Parts*. Suppose I would multiply by the aliquant part 19*s.* I first take for 10*s.* half the multiplicand; then for 5*s.* which is the fourth, and lastly for 4*s.* which is the fifth. The products of the three aliquot parts that compose the aliquant part, being added together, the sum will be the total product of the multiplication, as in the following example; which may serve as a model for multiplication by any aliquant part that may occur.

Multi-



Multiplicand	-	-	356 ells
Multiplier	-	-	19s.
<hr/>			
			178l. for 10s.
			89l. for 5s.
			71l. 4s. for 4s.
<hr/>			
Product	-	-	338l. 4s.

MULTIPLICATION, *for the Proof of.* The operation is right, when the product, divided by the multiplier, quotes the multiplicand; or divided by the multiplicand, quotes the multiplier. A readier way, though not absolutely to be depended on (see ADDITION), is thus: add up the figures of the factors, casting out the nines; and setting down the remainder of each; these multiplied together, out of the factum cast away the nines, and set down the remainder: if this remainder agree with the remainder of the factors of the sum, after the nines are cast out, the work is right.

MULTIPLICATION, *Cross*, otherwise called *Duodecimal Arithmetic*, is an expeditious method of multiplying things of several species, or denominations, by others likewise of different species, &c. *e. gr.* shillings and pence by shillings and pence; feet and inches by feet and inches. This is much used in measuring, &c.

F.	I.
5	3
2	4
<hr/>	
10	6
1	8
0	1
<hr/>	
12	3

The method is thus: Suppose 5 feet 3 inches to be multiplied by 2 feet 4 inches: say, 2 times 5 feet is 10 feet, and 2 times 3 is 6 inches: again, 4 times 5 is 20 inches, or 1 foot 8 inches; and 4 times 3 is 12 parts, or 1 inch: the whole sum makes 12 feet 3 inches. In the same manner you may manage shillings and pence, &c.

MULTIPLICATION, in *Algebra*. To multiply algebraic quantities, we must attend not only to the quantities themselves, but also to their signs.

The general rule for the signs is, that when the signs of the factors are like, (*i. e.* both + or both -) the sign of the product is +; but when the signs of the factors are unlike, the sign of the product is -.

Then, if the quantities to be multiplied be simple quantities, find the sign of the product by the last rule; after it place the product of the coefficients, and then set down all the letters after one another, as in one word.

If the factors be compounded quantities, multiply every part of the multiplicand by all the parts of the multiplier taken one after another, and then collect all the products into one sum; which will be the product required. See Maclaurin, Saunderson, Hammond, or any other elementary writers.

The reason of the rule here given for the signs of the product, *viz.* that + by +, or - by - give +, and that + by -, or - by + give -, is apt to perplex beginners. But if it be considered, that in all multiplication the multiplier is, strictly speaking, a number, the difficulty soon vanishes: for, 1. When any positive quantity + *a* is multiplied by any positive number + *n*, the meaning is, that + *a* is to be taken as many times as there are units in *n*, and therefore the product is evidently + *na* or *na*, the positive sign being omitted.

2. When - *a* is multiplied by *n*, then - *a* is taken as often as there are units in *n*, and the product must be - *na*.

3. As multiplication by a positive number implies a re-

peated addition, multiplication by a negative implies a repeated subtraction: so that when + *a* is to be multiplied by - *n*, the meaning is, that + *a* is to be subtracted as often as there are units in *n*; therefore the product must be negative, being - *na*.

4. When - *a* is to be multiplied by - *n*, then - *a* is to be subtracted as often as there are units in *n*; but by the rules of subtraction, to subtract - *a* is equivalent to adding + *a*, and consequently the product is + *na*.

The second and fourth cases may be thus illustrated: by the import and meaning of the signs + and -, + *a* - *a* must be = 0. Therefore if we multiply + *a* - *a* by *n*, the product must vanish, or be nothing; because the factor *a* - *a* = 0. The first term of the product is + *na* by case 1. Therefore the second term of the product must be - *na*, which destroys + *na*; so that the whole product must be + *na* - *na* = 0. Therefore - *a* multiplied by + *n* gives - *na*.

In like manner, if we multiply + *a* - *a* by - *n*, the first term of the product being - *na*, the latter term of the product must be + *na*, because the two together must destroy each other, or their amount be 0, since one of the factors *a* - *a* = 0. Therefore - *a* multiplied by - *n*, must give + *na*. See Maclaurin's Algebra, part i. chap. 4. Saunderson's Algebra, vol. i. p. 57. And Barrow's Eucl. Schol. Prop. i. Elem. 2.

Examples.

Mul.	$+a$	$-2a$	$+6x$	$-8x$	$+3ab$
By	$+b$	$+4b$	$-5a$	$-4a$	$-5ac$
Products	$+ab$	$-8ab$	$-30ax$	$+32ax$	$-15a^2bc$
<hr/>					
$a+b$	$2a-3b$			$2a-4b$	
$a+b$	$4a+5b$			$2a+4b$	
<hr/>					
$a^2+ab$	$8a^2-12ab$			$4a^2-8ab$	
$+ab+b^3$	$+10ab-15b^2$			$+8ab-16b^3$	
<hr/>					
$a^2+2ab+b^2$	$8a^2-2ab-15b^2$			$4a^2-16b^2$	
<hr/>					
$x^2-ax$			$a^2+ab+b^3$		
$x+a$			$a-b$		
<hr/>					
$x^3-ax^2$			$a^3+a^2b+ab^3$		
$+ax^2-a^2x$			$-a^2b-ab^2-b^3$		
<hr/>					
$x^3-a^2x$			$a^3-b^3$		

See EXPONENT.

MULTIPLICATION, in *Geometry*, or in lines, is effected by supposing a line *ab* (Plate X. *Geometry*, fig. 6.), called the *describent*, moving perpendicularly along another *bc*, called the *dirigent*.

For, by this means, the describent forms the rectangle *adcb*; and if it be divided, together with the dirigent, into any number of equal parts, it will, by its motion, describe as many little rectangles as the units in the describent and dirigent will produce, when multiplied into one another, *viz.* 21. For when the line *ab* hath moved over one part of *ad*, it will, by its three parts, have described the three little rectangles in the first column; when it comes to two, it will have described three more: and this is the reason why multiplication, in the Latin tongue, is usually expressed by the word *ducta*, drawn; (and from hence also comes *product*) as if *ab* were multiplied by *bc*, they say *ab ducta in bc*; because the describent is led, as it were, or carried along



along in an exact posture upon the dirigent, and by that means describes the rectangle; so that the rectangle and product are the same in geometry.

Now, as in all multiplication unity is to one factor as the other is to the product, multiplication in lines may be performed thus. Let  $ab$  (fig. 7.) be to be multiplied by  $ad$ . Make any angle at pleasure; on one of the legs set off  $au =$  to unity, and on the same leg set off  $ud$ , the multiplier (3); then set the multiplicand  $ab$  (2) from  $a$  on the other leg of the angle; draw  $ub$ , and parallel to it, through  $d$ , draw  $dc$  (6), I say,  $dc$ , or 6, is the product; for  $au : ad :: ab : dc$ .

MULTIPLICATION of Plants, in Botany. See FECUNDITY and PLANTS.

MULTIPLICATIVES. See NUMERALS.

MULTIPLICATOR, a number multiplying another called the *multiplicand*.

The largest number is ordinarily made the multiplicand, and placed above the smaller, or multiplier; but the result is the same, which soever of the numbers be made multiplicand or multiplier; 4 times 5, and 5 times 4, making the same sum.

MULTIPLIER, in Arithmetic, the number multiplying, or multiplier.

MULTIPLYING, in the Ancient Economy, the producing of one's like.

Mankind multiplied at a prodigious rate before the flood. Rabbits, fish, and most insects, multiply incredibly; the single milt of a cod, examined with M. Leewenhoeck's microscope, was found to contain more ova than there are animals on the face of the earth. See FECUNDITY of FISH.

M. Dodart has several discourses on the multiplication of plants, in the Memoirs of the Royal Academy of Sciences. He has examined the beech-tree, particularly, with this view, and found its increase to surpass all imagination.

MULTIPLYING, in Arithmetic, is the finding a number which contains the multiplicand as often as there are units in the multiplier.

The rule of three consists in multiplying the third term by the second, and dividing the product by the first. See RULE of Three.

MULTIPLYING-Glass, a lens or glass, in which objects appear increased in number.

A multiplying-glass, called also a *polyhedron*, is a glass formed or ground into several planes, or faces, making angles with one another; through which the rays of light, issuing from the same point, undergo different refractions, so as to enter the eye from every surface in a different direction; as if they came from several points.

And thus the same point is seen in several imaginary foci; and therefore appears multiplied. For the phenomena and laws of multiplying-glasses, see POLYHEDRON.

MULTISILIQUÆ, in Botany, the twenty-sixth among the Natural Orders of Linnæus, so termed because the fruit consists of several aggregate seed-vessels, which have the appearance of pods. It is divided into four sections, the first consisting of *Peonia*, *Aquilegia*, *Aconitum*, *Delphinium*, to which Linnæus afterwards added *Cimicifuga* and *Aëlea*; the second composed of *Diæmanthus*, *Ruta*, and *Peganum*; the third of *Nigella*, *Garidella*, *Isopyrum*, *Trollius*, *Helleborus*, *Caliba*, *Ranunculus*, *Myosurus*, *Adonis*; and the last of *Anemone*, *Atragene*, *Clematis*, *Tbaliærum*, and originally of *Aëlea*. The second section contains the very distinct order of *Rutaceæ*, of which Linnæus, and even Jussieu, had very slight and imperfect knowledge as a natural assemblage. These require to be removed from hence. The remainder

agree in their acrid qualities, and are kept together by Jussieu, under the title of *Ranunculaceæ*.

MULTITUDE, MULTITUDE, an assemblage, or collection, of a great number of things, or persons.

Multitude is properly the abstract whereby things are said to be many.

In which sense, multitude may be considered as *number*, and stands opposed to *unity*.

In law, some will have multitude to imply at least ten persons; but sir Edward Coke says, he could never find it restrained, by the common law, to any certain number, but always left to the discretion of the judges.

MULTIVALVES, in Natural History, the name of a general class of shell-fish, distinguished from the univalves, which consist of only one shell, and the bivalves, which consist of two, by their consisting of three or more shells. See CONCHOLOGY.

MULTO, in Geography, a town of Hindoostan, in the circar of Bickaneer; 16 miles W. of Bickaneer.

A *MULTO Fortiori*, or *à minore ad majus*, is a way of argumentation often used by Lyttleton; whose force is thus: if it be so in a less case, passing a new right; much more is it for the restitution of an ancient right.

MULTONES AURI, in our Ancient Writers, an old coin of gold, having an Agnus Dei, sheep or lamb, on the one side, and from that impression called *multones*. This coin was most common in France, and sometimes current in England. Patent 33 Edw. I., cited by the learned Spelman.

MULTUM, in Arithmetic. If A be one, B one, C one, D one, &c. and B, C, and D, be not the same with A; A, B, C, and D, are *multa*, or *plura*, many. Wolfius.

MULTURA EPISCOPI. See MULTA.

MULUCHA, in Geography. See MULLOOIAH.

MULUD, in the *Materia Medica*, a word used by Avicenna and Serapion to express a sort of litharge, called by the Greeks molybdites, as seeming to partake of the nature of lead alone, not of gold or silver, or any other metal, as they thought the argyrites and chrysites did. This mulud, or molybdites, was the least in esteem of all the kinds of litharge, and was of a dusky greyish-white colour. It seems to be the same that Dioscorides means by pelia and polia, and sometimes by lithargyrus Sicilicus, from the place whence it was brought.

MULUGUNGE, in Geography, a town of Bengal; 23 miles S.E. of Dacca.

MULWAGGLE, a fort of Hindoostan, in Mysore; 22 miles E. of Colar.

MULYGUNGE, a fort of Hindoostan, in Bahar; 60 miles S.S.E. of Durbungah. N. lat. 25° 53'. E. long. 87° 13'.—Also, a town of Bengal; 20 miles N.N.W. of Purneah.

MUM, a wholesome kind of malt liquor chiefly prepared in Germany.

The process of making mum, as recorded in the town-house of Brunswick, the place of most note for this liquor, is as follows:

Take sixty-three gallons of water that has been boiled to the consumption of a third part; brew it with seven bushels of wheaten malt, one bushel of oat malt, and one bushel of ground beans; when it is tunned, let not the hogthead be too full at first; and as soon as it begins to work, put into it of the inner rind of fir three pounds, tops of fir and birch each one pound, carduus benedictus three handfuls, flowers of rosa folis one handful or two; burnet, betony, marjoram, avens, pennyroyal, wild thyme, of each a handful and a half; of elder-flowers two handfuls,



fuls, or more; feeds of cardamom bruised thirty ounces, barberries bruised one ounce: put the herbs and feeds into the vessel when the liquor has worked a while; and, after they are added, let the liquor work over the vessel as little as may be; then fill it up. Lastly, when it is stopped, put into the hog'shead ten new-laid eggs unbroken or cracked, stop it up close, and drink it at two years end.

Our English brewers use cardamom, ginger, and saffras, instead of the inner rind of fir; and add also walnut-rinds, madder, red sanders, and elecampane.

MUMBACUM, in *Geography*, a town of Hindoostan, in the Carnatic; 15 miles S. of Arcot.

MUMBLE POINT, a rock in the Bristol channel, at the entrance into Swansea bay. N. lat.  $51^{\circ} 37'$ . W. long.  $4^{\circ} 3'$ .

MUMBOLE, a town of Hindoostan, in the Carnatic; 20 miles S.W. of Nellore.

MUMBOS, a country of Africa, N.W. of Mocaranga. The inhabitants of this country are a race of cannibals, who have been accustomed to devour their captives and slaves, and who, with the Zimbas and Jagas, have defolated a great part of southern Africa. The Jagas, of whose savage conduct we have given an account under that article, seem to have been the Tartars of central Africa, consisting chiefly of wandering tribes who range from the south of Abyssinia to the confines of Congo W. and of Mocaranga E.

MUMMERS, from *Mummerie*, Fr. or from the Teutonic, *mummen*, to *minic*; or rather it is a corruption of *mimers*, from pantomime, antic diversions in the Christmas holidays, to get money or good cheer.

MUMMY, MUMIA, a carcase, or body, embalmed or dried in the manner of the ancient Egyptians.

Menage, after Bochart, derives the word mummy from the Arabic *mumia*; of *mum*, wax: Salmasius from *amomum*, a kind of perfume; though others hold, that, in the Arabic tongue, the word *mumia* signifies a body embalmed, or aromatized.

Properly speaking, mummy is not the flesh of the deceased, but the composition with which it is embalmed; but, in common acceptation, mummy is also used for the body.

The preparation of mummy is of so old a standing, that it was in use in Egypt before the time of Moses. The coffin in which the mummy is contained was to be of sycamore wood, which is found to keep sound for the space of 3000 years; but the tree, properly thus called, was very different from our sycamore.

Mummy is said to have been first brought into use in medicine by a Jewish physician, who wrote, that flesh thus embalmed was good for the cure of divers diseases, and particularly for bruises, to prevent the blood gathering and coagulating. The Turks prevent the exportation of mummy into Europe as much as possible.

There are two kinds of bodies denominated mummies. The first are only carcases, dried by the heat of the sun, and by that means kept from putrefaction: these are frequently found in the dry sands of Lybia. Some say, they are the bodies of deceased people buried there on purpose, to keep them entire without embalming; others, that they are the carcases of travellers, &c. who have been overwhelmed with clouds of sand raised by the hurricanes frequent in those deserts. Be that as it will, these mummies are of no use in medicine, and are only preserved as curiosities.

Mummies of the second kind are bodies taken out of

the pits or catacombs near Cairo, in which the Egyptians deposited their dead after embalming. These constitute the mummy once so much valued, and to which such extraordinary virtues are ascribed. See EMBALMING.

It is said, that all the mummy sold in the shops, whether brought from Venice or Lyons, or even directly from the Levant by Alexandria, is factitious, and the work of certain Jews, who knowing the value the Europeans set on the Egyptian mummy, counterfeit it by drying carcases in ovens, after having prepared them with powder of myrrh, caballine aloes, Jews' pitch, black pitch, and other coarse or unwholesome drugs.

The French charletans, it seems, had likewise got the art of preparing mummies. Their method was simple enough: out of the carcase of a person hanged, they take the brain and entrails, and dry the rest in an oven, steeping it in pitch and other drugs; and this they sell for right Egyptian mummy.

There have been found in Poland a kind of natural mummies, or human bodies, preserved without the assistance of art. These lie in considerable numbers in some of the vast caverns in that country. They are dried, with the flesh and skin shrunk up almost close to the bones, and are of a blackish colour. In the wars which several ages ago laid waste that country, it was common for parties of the weaker side to retire into these caves, where their enemies, if they found it out, suffocated them by burning straw, &c. at the mouth of the cavern, and then left the bodies; which, being out of the way of injuries from common accidents, have lain there ever since.

Paræus has a very curious treatise of mummies, in which he shews the abuses of them; and makes it appear, that they can never be of any real medicinal use.

Matthioli is of the same opinion, after Serapion. Both these authors take even the Egyptian mummies to be no more than bodies embalmed with pissasphaltum.

MUMMY, *Mumia*, is more particularly used for the liquor or juice oozing from human bodies aromatized and embalmed, gathered in the sepulchres. This is the mummy chiefly spoken of among the ancient writers.

MUMMY, *Mumia*, also denotes a medicinal drug, or a viscous composition, partaking of bitumen and pitch, found in the mountains and forests of Arabia, and other hot countries in the East; much used in embalming of dead bodies.

Dioscorides speaks of mummy found on the sea-coast near Epidaurus, brought thither by the torrents from the Ceraunian mountains, and there dried by the sun into huge masses.

It smells like bitumen mixed with pitch. The people thereabouts call it mineral wax. In Latin, or rather Greek, it is called pissasphaltus.

This substance is found in Khorasan, and in the deserts of Kerman, in Persia, and derives its name from the Persian word *moum*, signifying wax, gum, or ointment. It was formerly supposed to proceed from the human body; but, according to Chardin, it is a singular gum which distils from rocks; and the mines of the precious mastic, as he calls it, are carefully sealed for the royal use. It is, probably, a kind of asphaltum; but seems to be a variety which has escaped the notice of mineralogists.

MUMMY, *Mumia*, is also used, by some physicians, for a supposed implanted spirit, found chiefly in carcases, when the infused spirit is fled.

The infused spirit is sometimes also called mummy in living subjects; and both the one and the other are supposed to serve in transplantation.

A plant.



A plant, for instance, bringing this mumia from one subject to another, the mumia joins and unites itself immediately with the mumia or spirit of the new subject; and from this union arises a natural and common inclination between the two subjects. And on this principle they account for sympathetic or magnetic cures. But this whole doctrine is now deservedly ridiculed and exploded.

MUMMY is also used, among *Gardeners*, for a sort of wax used in the planting and grafting of trees.

Agricola directs the preparation of it as follows: take one pound of common black pitch, and a quarter of a pound of common turpentine; put them together in an earthen pot, and set them on fire in the open air, having a cover ready to quench the mixture in time: the matter is to be thus alternately lighted and quenched, till all the nitrons and volatile parts be evaporated. To this a little common wax is to be added; and the composition is then to be set by for use.

To apply it in the dressing of roots of trees, melt it, and dip in the two ends of the pieces of root, one after another; then put them in water, and plant them in the earth, the small end downward, so that the larger may appear a little way out of the earth, and so may have the benefit of the air; then press the earth hard down upon them, that they may not receive too much wet. Miller.

MUMPS, in *Medicine*, the popular appellation of that form of quinsy, which is accompanied with inflammation and swelling of the parotid glands. In Scotland the disease is called *the branks*. See *CYNANCHE parotideæ*.

MUMRAH, in *Geography*, a town of Bengal; 38 miles N.N.W. of Midnapour.

MUNARI, PELLEGRINO DA, in *Biography*, a painter who had the happiness to be scholar and assistant to Raphael, in executing the works for the chambers of the Vatican. His real name was Pellegrino Munari, but being born at Modena, he most usually bore the name of his native city. He possessed considerable talents, and, according to M. Fuseli, resembled his master more than any of his contemporaries in the airs of his heads, and the graces of attitude; but he lived too short a time to have much to testify the truth of this assertion, dying at the early age of 38, in the year 1523.

MUNCARA, in *Geography*, a town of Bengal; six miles S. of Cossimbazar.

MUNCER, THOMAS, in *Biography*, a famous fanatic, was born at Zwickaw, a town of Misnia, in Germany, probably towards the close of the fifteenth century. He was educated to the church, and became a disciple of Luther, whose tenets he propagated some time with great zeal and success in Thuringia. He connected himself with Nicholas Storck, a leader among the Baptists, who pretended to have communications with the Almighty, and to hold greater purity of doctrine than the rest of the party. Muncer was a convert to his notions, and became ardent in making proselytes. He maintained that for men to avoid vice, they must practise perpetual mortification. They must put on a grave countenance, speak but little, wear a plain garb, and be serious in their whole deportment. Such as prepared their hearts in this manner, might expect that the Supreme Being would direct all their steps, and by visible signs discover his will to them; if that illumination be at any time withheld, he says we may expostulate with the Almighty, and remind him of his promises. This expostulation will be acceptable to God, and will at last prevail on him to guide us with the same unerring hand which conducted the patriarchs of old. He also maintained, that all men were equal in the sight of God, and that, therefore, they ought to have all things in common, and should on no account exhibit any

marks of subordination or pre-eminence. These notions, so flattering to the feelings of the mass of the people, spread rapidly among the peasants of Thuringia, and produced the most serious tumults and commotions in that and some other parts of Germany, which in the end brought on their own destruction, and that of their leader. This occurred about the year 1526. Moreri. Robertson's Hist. of Charles V.

MUNCERA, in *Geography*, a town of Hindoostan, in Baglana; 10 miles N. of Junare.

MUNCEY, a town of America, in Lycoming county, Pennsylvania; 231 miles from Washington.

MUNCHAURACH, a town of Germany, in the principality of Culmbach; 13 miles E. of Neustadt.

MUNCHAUSIA, in *Botany*, a supposed genus, dedicated by Linnæus to the honour of baron Gerlach Adolphus von Munchhausen, governor of Hanover, who greatly improved the botanic garden at Gottingen, and also of the baron Otho von Munchhausen, minister there, a distinguished practical botanist and rural economist. This genus however is now sunk in the more ancient one *LAGERSTROEMIA*; see that article.

MUNCHBERG, in *Geography*, a town of Germany, in the principality of Culmbach; six miles S. of Hof.

MUNCHENBERG, a town of Brandenburg, in the Middle Mark; 19 miles W. of Custrin. N. lat. 52° 30'. E. long. 14° 15'.

MUNCHHAUSEN, a town of Bavaria; 12 miles W. of Vilzhoven.

MUNCK, JOHN, in *Biography*, a celebrated Danish navigator, who flourished in the early part of the seventeenth century: on account of the discoveries of Hudson in 1610, Munck was ordered by his sovereign to pursue the same route, to determine if it were possible to proceed to India by a north-west passage. Two ships were equipped for this expedition, and in May 1619, Munck set sail from the Sound. He passed through Hudson's strait, and discovered an island in latitude 60° 20' north, to which, on account of the rein-deer found on it, he gave the name of Deer Island. He also gave the name of Mare Novum to the sea that washes the coast of Labrador, and the appellation of Mare Christianum, or Christian's Sea, to the part adjacent to Greenland. In the latitude where he was, he met with so much ice, as rendered it impracticable for him to advance farther north; he therefore directed his course to Churchill's river, where he landed, and where he found the ice to be more than one hundred yards thick. Here he and his crew were attacked most severely with the scurvy, which was followed by a dysentery, and when he was a little recovered, he found only two men of his ships companies alive, though the crews of the two ships had amounted to sixty-four. These two, it may be easily imagined, were overjoyed to see their commander, and the three afforded to each other every assistance in their power. As soon as the ice dissolved, and their health was pretty well restored, they left the two vessels in the river, giving it the name of Munck's harbour, and set out in a smaller one to return. Misfortune, however, seemed to follow them, they broke their rudder, and for a time lost their boat; but in ten days they recovered it, and after encountering a violent storm, which shattered their mast and carried away their sails, they reached a harbour in Norway, and in a few days after arrived at Copenhagen. After this, Munck was employed by his sovereign in the North sea, and in the Elbe, in the years 1623, 1625, and 1627. He died in the month of June 1628. Gen. Biog.

MUNDA, MONDA, in *Ancient Geography*, a town of Spain, in the S.W. part of Bætica, famous for a battle fought in its vicinity, between Cæsar and the sons of Pompey,



pey, in the year of Rome 708, in which the former was victorious, and the latter lost 3000 men.

MUNDANAGOODY, in *Geography*, a town of Hindoostan, in Golconda; six miles N. of Rachore.

MUNDANDIS *Vicis et Venellis*. See VICIS.

MUNDAPUM, in *Geography*, a town of Hindoostan, in Marawar; 16 miles E. of Ramanadporum.

MUNDATORY, the cloth or napkin used in wiping the sacerdotal chalice.

MUNDE, in *Geography*, a town of Pomerelia, on the Frisch Nerung; five miles N. of Dantzic.

MUNDELLA, a town of Hindoostan, in the country of Gurry Mundella; 40 miles S.E. of Gurrah. N. lat. 23° 45'. E. long. 80° 57'.

MUNDELLSVILLE, a town of America, in Shenandoah county, Virginia; 114 miles from Washington.

MUNDEN, or GEMUNDEN, a town of Westphalia, in the principality of Calenberg, at the conflux of the Warra and the Fulda, containing two Lutheran churches, an elegant building for the worship of the Calvinists, an hospital, and barracks for a double garriſon. The goods brought hither by land and water are sent down the Weſer, and other goods in return are brought hither by the ſame mode of conveyance. No foreigner or non-freeman of Munden is allowed to trade here, but is required to conſign his goods to a factor of the town; 13 miles S.W. of Gottingen. N. lat. 51° 26'. E. long. 9° 35'.

MUNDER, a town of Westphalia, in the principality of Calenberg, on the Hammel, near which is a ſalt-work. N. lat. 52° 11'. E. long. 9° 24'.

MUNDERAR, a province of Candahar, in the northern part of Cabul.

MUNDERKINGEN, a town of Wirtemberg, ceded to it in 1805 by Austria, ſituated on the Danube; nine miles N. of Bachau. N. lat. 48° 14'. E. long. 9° 40'.

MUNDI ANIMA. See ANIMA.

MUNDIBURDUS. See ADVOCATE.

MUNDIC, a name for marcaſite; a kind of mineral glebe, found in the tin-mines, and elſewhere; ſometimes white, yellow, or green; and ſometimes of a dark brown colour. It is of an arſenical nature. See Geoffroy, in Mem. Acad. Scienc. 1738, p. 107. edit. Par. It is frequently called *marx*.

The mundic ore is eaſily diſtinguiſhed by its glittering, and ſometimes by its diſcolouring the fingers. Some ſay, it feeds the tin; and yet they allow, that where there is much mundic there is little or no tin.

What is called mundic in Cornwall, frequently contains a large portion of copper.

The ſteams of the mundic are very troubleſome to the miners; yet it is found a good vulnerary; and the miners uſe no other remedy for wounds, but waſhing them in water that runs from the mundic ore. See MARCASITE.

MUNDIFICATIVES, or MUNDIFIERS, in *Medicine*, denote *cleaſers, purifiers, or detergents*.

Mundificative platters, or unguents, are ſuch as deterge and dry, and thus cleaſe ulcers of two kinds of matter, viz. *pus* and *ſanies*.

The chief ingredients in mundificative unguents are, gentian, ariſtolochia, enula, campana, and the vulnerary herbs.

MUNDINUS, in *Biography*. See MONDINO.

MUNDU, in *Geography*, a town of Hindoostan, in the country of Malwa, formerly its capital; 32 miles S.W. of Indore. N. lat. 22° 45'. E. long. 75° 40'.

MUNDUS PATENS, among the Romans, a ſolemnity performed in a little temple of a round form; and dedicated to Dis, and the infernal gods.

VOL. XXIV.

It was opened only three times in a year, viz. on the day after the Vulcanalia, the fourth of October, and the ſeventh of the ides of November, during which days the Romans believed that hell was open; and therefore they never offered battle on thoſe days, liſted no ſoldiers, never put to ſea, nor married.

MUNDY, JOHN, in *Biography*, in 1594, gentilman, baſchiler of muſicke, and one of the organiſts of his majeſty's free chapel of Windſor, published *Songs and Pſalmes compoſed into three, four, and ſix parts, for the uſe and delight of all ſuch as either love or ſeame Muſicke*. Theſe are dedicated to the unfortunate earl of Eſſex, with all the punning, quibbling, and efforts at wit, which the taſte of the times encouraged, and indeed required.

MUNERARIUS. See DESIGNATOR.

MUNGALOVA, in *Geography*, a town of Ruſſia, in the government of Irkutſk; at the union of the rivers Ona and Uda.

MUNGAN, a town of Hindoostan, in the circar of Bopal; 20 miles S.E. of Bopaltol.

MUNGARVA, a town of Africa, in Nigritia. N. lat. 11° 42'. E. long. 23° 45'.

MUNGLA, a town of Hindoostan, in Bahar; 33 miles S.W. of Patna.

MUNGLAPET, a town of Hindoostan, in Myſore; five miles N. of Dalmachery.

MUNGLORE, a town of Candahar; 25 miles W. of Caſchemire. N. lat. 34° 15'. E. long. 71° 15'.

MUNGO, in *Zoology*, the name of an American animal, of the ferret kind, called by authors *viverra Indica grifeo-rufefcens*, or the reddiſh-grey Indian ferret. Some call it alſo *mungathia*. See VIVERRA.

MUNGRRAR, in *Geography*, a town of Bengal; 12 miles S.S.W. of Curruckpour.

MUNGULHAUT, a large manufacturing town of Hindoostan; 12 miles from Calamatty, ſituated on the S. ſide of the river Durlah, which divides the diſtrict of Cooch Bahar from that of Rungpore. The inhabitants of this town pay a greater attention to the comforts and commodiouſneſs of living, than thoſe of any other town which captain Turner viſited in India. Their houſes, compoſed of mats inſerted between frames of bamboo, are neatly thatched, and each had a portion of land encircled with a bamboo palifade. The ſtreets are ſpacious; and boats of large burthen upon the river, added to the neatneſs and regularity of the town, give it an air of induſtry and traffic. The ſtaple commodity conſiſts of cotton cloths, which furniſh the moſt conſiderable part of the large returning cargo, which is carried by the Bootan caravan annually from Rungpore. Turner's Embaſſy to Tibet, p. 7.

MUNHAY, a county of Africa, dependent on Mocaranga.

MUNI, in *Hindoo Mythological Hiſtory*, is a name applied on a variety of occasions, and with ſeeming conſuſion and contradiction. Mr. Colebrooke, the worthy ſucceſſor of ſir William Jones in the chair of the Aſiatic Society of Bengal, on the authority of the Puranas, ſeems to identify the Riſhis and Munis. He calls them "the virtuous ſages, who delight in proteſting the people; the mighty ſages." Af. Ref. vol. ix. p. 358. (See RISHI.) Some authorities enumerate twenty of theſe perſonages, who are ſometimes called "inſpired writers." Sometimes they appear as anchors or aſcetics. "In the midſt of a wild and dreary foreſt, flouriſhing with trees of ſweet-ſcented flowers, and abounding in fruits and roots, inſeſted with lions and tigers, deſtitute of human ſociety, and frequented by the Munis, reſided Budha, the author of happineſs, and a portion of Narayana."



Narayana." This passage is from an inscription on a stone found in Bengal, translated by Dr. Wilkins. (As. Ref. vol. i.) The appellation is sometimes given to Budha or Boodh, (see BOODH,) who is called Budha Muni. Both words seem to mean *wisdom*, more especially divine wisdom, or theology: and Muni may perhaps be traced to the same root with Menu, to *men* or *man*, the *mind*. See MENU.

In that curious work of Anquetil du Perron, which he styles Oupnekhat, (see UPINSHAD,) the following passage occurs, translated from one of the Puranas: "Brahm said, Rise up, O Rudra (or Siva), and form men to govern the world. Rudra immediately obeyed: he began the work; but the men he made were fiercer than tigers, having nothing but the destructive quality in their composition: and they soon destroyed one another; for anger was their only passion. *Brahma, Vishnu, and Rudra*, then joined their different powers and created ten men, whose names were *Nareda, Daksha, Vasishta, Brighu, Kritu, Pulaha, Pulastya, Angira, Atri, and Marichi*; (that is, Reason, Ingenuity, Emulation, Humility, Piety, Pride, Patience, Charity, Deceit, Morality:) the general name of whom is the Munis. Brahma then produced Dharma, or Justice, from his breast; Adharma, Injustice, from his back; Labha, Appetite or Passion, from his lips; and *Kama*, Love or Desire, from his heart. The last was a beautiful female, and Brahma looked upon her with amorous emotions; but the Munis telling him that she was his own daughter, he shrunk back, and *Ladja*, Shame, a blushing virgin (see LADJA,) sprung from him. Brahma, deeming his body defiled by its emotions towards Kama, purified himself by partially changing it into ten females, who were respectively espoused by the Munis." Farther notice of those personages whose names in the above quotation are distinguished by italics, will be found under those articles.

In the Gita (see MAHABARAT), Krishna, amplifying himself by comparison with many pre-eminent persons and things, or rather identifying himself therewith, says, "I am Muni Kapila among the Saints." (See KAPILA.) It is said, however, that the philosopher just referred to is not the Kapila of the Gita. The Hindoo books abound with stories of the potency of these devotees, under the names of Rishis, or Munis. On one occasion, Kapila having been rudely disturbed while at his devotion, "filled with excessive anger, uttered from his nostrils a loud sound, and instantly by him, of immeasurable prowess, were all the sons of Sagar (60,000 in number) reduced to ashes." This is from a long and extravagant, but poetical, story related in the first book of the Ramayana. On another occasion, as related in the Sanscrit book, entitled *Maha-kala-sanhita*, Mahadeva, or Siva, who was rambling over the earth naked, chanced to pass near the spot where several Munis were performing their devotions: Mahadeva laughed at them, and insulted them in very provoking and indecent terms, enforcing his abuse by significant signs and gestures. The offended Munis cursed him; and the Linga or Phallus fell to the ground. (See LINGA.) Mahadeva, in this state of mutilation, travelled over the world bewailing his misfortune; his consort, too, gave herself up to grief, and followed him in a state of distraction, singing mournful songs. In this legend, Mr. Wilford (As. Ref. vols. iii. and iv.) finds the Grecian story of the wanderings of Bacchus, and the lamentations of Dematur. It may be here noticed, that the names of Bacchus and Dematur, (or Dimeter, having two mothers) may be recognized in Bagheda and Devimatri, names of Siva and his reputed, many-mothered, for Kartikya. (See KARTIKYA.) In the article just referred to, it is noticed how the reputed son of Bagheda, or Siva, claims also a fiery

parentage, through the instrumentality of Agni. (See PAVAKA.) Hence he is also called Agni-bhuva, and Agnija, born from fire: Pyrigenes is a Greek name of Bacchus, of a like derivation. These analogies are not confined to names, but extend to actions and attributes, in reference as well to the deified personages immediately under discussion, as to many others common to Grecian, Egyptian, and Indian mythology. See MYTHOLOGY of the Hindoos.

MUNIANEN, in *Geography*, a town of Prussia, in the circle of Natangen; 36 miles S. of Königsberg.

MUNIC, BURCHARD CHRISTOPHER, Count, in *Bio-graphy*, a celebrated general, was born of a noble family in the county of Oldenburgh, in the year 1683. He was well educated, and so advantageously did he improve his time and his talents, that at the age of sixteen he had made such a progress in the sciences, and in the languages, that he was deemed qualified to undertake a tour in France, where he made great advances in various branches of learning, and applied himself particularly to engineering and fortification. By Lewis XIV. he was appointed an engineer in the French army, an office in which he did not long continue, on account of his unwillingness to serve against the empire: he accordingly returned to Germany, was made a captain, and, with his troops, was present at the siege of Landau. After this he entered into the service of the prince of Hesse-Cassel, and had an opportunity of improving himself in the art of war under the duke of Marlborough and prince Eugene. On account of his great bravery at the battle of Malplaquet, he was raised to the rank of lieutenant-colonel. At the battle of Denain, in 1712, he was dangerously wounded, and taken prisoner by the French, but being liberated the following year he was promoted to the command of a regiment. After this he was employed in high civil and military posts by Augustus II. king of Poland, and by the Russian Peter the Great. In 1723 he was entrusted with the construction of the famous canal of Ladoga, (see CANAL,) which he completed with so much skill and alacrity, that the czar, as a mark of his satisfaction, admitted him a member of his council. The empress Catharine conferred on him the order of Alexander Newski; in the year 1727 Peter II. made him commander-in-chief, and in 1728 raised him to the rank of count. Under the empress Anne, he, in the course of a few years, became president of the college of war, general field marshal, chief of the new corps of noble land cadets, and knight of the order of St. Andrew. He was appointed commander of the Russian troops in Poland, and reduced Dantzic: in 1735 he defeated the Tartars of the Crimea, and made himself master of some very strong towns, but with the heavy loss of 30,000 men: for this, though his enemies did all in their power to undermine his reputation, the empress rewarded him with the grant of a considerable estate in the Ukraine. In the year 1737 he took Oczacow by storm, and, after an almost uninterrupted series of victories, reduced Choczim in 1739, and subjected the greater part of Moldavia to the Russian dominion. After the death of the empress Anne, his great ambition was to be appointed generalissimo of the naval and land forces, and being disappointed, he resigned his various employments. On the accession of Elizabeth he was arrested, under the pretence that he had persuaded the empress Anne to nominate Ivan as her successor, but the real cause of this step was, that by order of that empress he had taken into custody one of Elizabeth's favourites, whose turn it now was to take revenge.

Munic was brought before a committee appointed to examine state prisoners, or rather appointed to execute the orders



orders of the court. Being fatigued with an almost endless repetition of questions, and perceiving that his judges were determined to find him guilty, he said to them, "Dictate the answers you wish me to make, and I will sign them." The judges, to their disgrace, immediately wrote down a confession of several acts with which they chose to charge him, and which being subscribed by the count, the mock trial ended. He was now condemned to suffer the penalties attached to the crime of high treason: these were afterwards commuted to perpetual imprisonment. For the space of twenty years he was confined at Pelim, in Siberia, in a prison surrounded with palisadoes, of which he had himself drawn the plan, meaning to confine in it his enemy Biren. The place of his imprisonment was an enclosure of about 170 feet square, within which was a wooden house, inhabited by him, his wife, and a few servants. He was allowed for his maintenance 12s. a-day, which he increased by keeping cows, and selling part of their milk, and by occasionally instructing young people in geometry and engineering. Besides the culture of his little farm, and the hours which he spent in giving instruction to the young, he found sufficient time for translating several psalms and prayers into German verse, and for writing a treatise upon the art of war; but in the last year of his imprisonment he was obliged to destroy all his writings, which had been the solace and amusement of so many years. He bore his imprisonment with resignation, tranquillity, and cheerfulness, and was accustomed to have prayers regularly in his family twice a-day. He had always lived in the expectation of recovering his liberty at the accession of Peter III., but he was no sooner informed of that event, than with the utmost agitation he began to dread that his expectation was ill-founded. He suffered, during several weeks, the most painful anxiety, between the passions of hope and fear, and was often heard to declare, that these few weeks appeared to him much longer than all the former years of his confinement. At length, on the 11th of February 1762, the messenger arrived from Petersburg with the order for his release. Upon being informed of the fact he fainted away, but on his recovery he fell down upon his knees, and offered his most grateful thanks to Almighty God for this change in his situation. He did not leave Pelim till the 19th, and on the 24th of March he reached Petersburg, in the same sheep-skin dress which he had worn during his long imprisonment. On the 31st he was admitted to an audience by the emperor: Peter, after hanging round his neck the order of St. Andrew, and restoring him to his ancient rank, said to him, "I hope that your advanced age will still permit you to serve me."—"Since your majesty," replied the count, "has raised me from darkness into light, and recalled me from Siberia to prostrate myself before your throne, I shall always be most willing to expose my life in your service. Neither a long banishment from the court, nor the climate of Siberia, have been able to damp, in the smallest degree, that fire which formerly shone with such lustre for the interest of the Russian empire and the glory of its sovereign."

Munic died in October 1767, at the age of eighty-five: he was a man of great talents, and possessed many and distinguished virtues, but he was not without his defects. His faults, however, scarcely injured any but himself, but his excellencies were of vast benefit to Russia. He favoured literature, and frequented the company of learned men. He was acquainted with the arts, for which he had a considerable taste, but he distinguished himself most as a general, and by his knowledge of tactics: he has, however, been accused of exercising too much severity to those who were

placed under his command. Coxe's Travels into Russia, vol. iii.

MUNICH, in *Geography*, a city of Bavaria, seated on the Isar, the capital of the kingdom and royal residence. This place, on account of its straight and broad streets, and fine buildings, is reckoned one of the handsomest cities not only in Germany, but in Europe; and the number of its inhabitants is said to be 40,000. Its palace, erected by the emperor Maximilian I., is an elegant and spacious edifice; and the city abounds with a variety of curious antiquities. Munich has manufactures of velvet, silk, wool, and tapestry. It was taken by the French in 1796, who, according to their usual practice, levied upon the elector a considerable contribution; and in 1800 it was taken by them again; 29 miles S.E. of Augsburg. N. lat. 48° 6'. E. long. 11° 32'.

MUNICHE, a town of South America, in the audience of Quito; 60 miles S. of St. Jago de la Laguna.

MUNICIPAL, MUNICIPALIS, or *Municipes*, compounded of *munus*, office, and *capio*, I take, or hold, an appellation given to the inhabitants of the municipia, or municipal cities.

In the Roman law, municipal denotes a person vested with the rights and privileges of a Roman citizen.

This title the Romans frequently bestowed on foreign cities and people; and, in effect, it was little more than a title.

MUNICIPAL Cities, *municipia*, were those whose inhabitants were capable of civil offices in the city of Rome.

These, however, according to Mariana, came somewhat short of the privileges of the colonies. They were towns or cities, which had the citizenship of Rome bestowed upon them, and yet still lived according to their own laws and constitutions; whereas the colonies were governed by the Roman laws.

They had no suffrages, or votes, at Rome, but were left to be governed by their own laws and magistrates. It is true, some few municipal cities, by particular merit, &c. obtained the liberty of votes; which occasioned that received distinction of *municipium sine suffragio*, & *municipium cum suffragio*.

They were so called, because *muneris hujus honorarii participes*; but by *munus honorarium* was meant no more than the bare appellation of a Roman, whereby they were privileged to fight in a legion, as denizens; and not in auxiliary bands, as associates. The first who had this honour were the Cærites.

MUNICIPAL, among us, is now applied to the customary laws that obtain in any particular city or province, and which have no authority in the neighbouring places. See LAW.

MUNICIPAL Officers, are those elected to defend the interests of cities, their rights and privileges, and to maintain order and good policy: as mayors, sheriffs, consuls, bailiffs, &c.

In Spain, the municipal offices are bought; in England, they are obtained by election.

MUNIE, in *Geography*, a town of Hindoostan, in the circar of Hissar; 15 miles N. of Hissar.

MUNILLA, a town of Spain, in Old Castile; 8 miles S. of Calahorra.

MUNIMENTS, or MINIMENTS, the evidences, or writings, whereby a man is enabled to defend the title of his estate.

Wrangford says, the word muniment includes all manner of evidence, deeds, charters, &c.



**MUNIMENT-house**, a little strong apartment in cathedral and collegiate churches, castles, colleges, or the like, destined for keeping the seal, evidences, charters, &c. of such church, colleges, &c. called *muniments*, or *miniments*.

**MUNIMINA**, formed of the Latin *munio*, *I defend* or *strengthen*, the grants or charters of kings and princes to churches: so called, because *cum eis muniuntur* against all those who would deprive them of those privileges.

**MUNIONS**, in *Architecture*. See **MULLIONS**.

**MUNIONS**, or *Muntions*, the pieces that divide the stern and quarter galleries in a ship.

**MUNITION**, or **AMMUNITION**, the provisions with which any place is furnished, in order for defence, or with which a vessel is stocked for a voyage: or those that follow a camp for its subsistence. See **AMMUNITION**.

**MUNITION-Bread** is the proportion of bread distributed every day to the soldiers of a garrison, or army. Each officer is allowed so many rations of munition-bread.

**MUNITION-Ships**, in the *Navy*, those which have stores on board, to supply the necessities to a fleet of men of war at sea.

In the time of an engagement, all the munition-ships and victuallers attending the fleet are to take their places and proper stations in the rear of all the rest, and not engage in the fight, but attend such directions as shall be sent unto them, at all times, by the admiral.

**MUNKATZKOE**, in *Geography*, a town of Russia, in the government of Kolivan, on the Torn; 180 miles E. of Kolivan. N. lat.  $54^{\circ} 52'$ . E. long.  $86^{\circ} 50'$ .

**MUNKHOLM**, a town of Norway, in the province of Drontheim; 3 miles N. of Drontheim.

**MUNKOES**, a town of Hungary, the castle of which, seated on a steep rock, and artificially fortified, is deemed impregnable. The town is situated on the river Latortza, and it is the residence of a Greek bishop, united with the Roman church, and a convent of the order of St. Basil; 52 miles E.S.E. of Caskau. N. lat.  $48^{\circ} 29'$ . E. long.  $20^{\circ} 14'$ .

**MUNKORP**, a town of Sweden, in Westmanland; 7 miles W. of Stroemsholm.

**MUNKY**, a town of Hindoostan, in Canara; 7 miles from Onore.

**MUNNERSTADT**, a town of the duchy of Wurtzburg, on the Louer; 9 miles N. of Schweinfurt. N. lat.  $50^{\circ} 18'$ . E. long.  $10^{\circ} 24'$ .

**MUNNY-SHELLER**, in *Natural History*, a name given by the natives of the East Indies to a species of red orpiment, which they have plentifully there. It is of a glowing colour, and has a great many shining spangles in it. They give this in fevers, after it has been calcined: it first melts in the fire, and then emits copious white fumes, smelling like those of arsenic. These are supposed to contain the poisonous parts of it, and it then becomes a safe internal medicine, and is given with great success.

**MUNNYPOUR**, or **MUNNEPOORA**, in *Geography*, a town of Asia, capital of Cassay; 264 miles N.N.E. of Aracan. N. lat.  $24^{\circ} 40'$ . E. long.  $95^{\circ}$ .

**MUNOOCORY**, a town of Hindoostan, in the Carnatic; 7 miles S.W. of Arnee.

**MUNOZ, JEROME**, in *Biography*, a Spanish mathematician, and oriental scholar, was born at Valencia, but at what period we cannot tell. He flourished in the sixteenth century, and rose first into fame in Italy, as a teacher of the Hebrew language at Ancona, where he was highly applauded on account of his intimate knowledge of the sacred tongue: nor was he less esteemed for his profound skill in the Greek

language, polite literature, and the mathematical sciences. He was next invited to undertake the professorship of Hebrew and the mathematics, at the university of Salamanca, where he spent the remainder of his days: he was author of several works, of which the following are the principal: "Institutiones Arithmeticae ad percipiendam Astrologiam et Mathematicas Facultates necessariae;" "Alphabetum Hebraicum cum ratione legendi cum punctis;" "Lectura Geographica." Moreri.

**MUNRY**, or **MUNREE**, in *Geography*, a river of Ireland, in the northern part of the county of Mayo, which runs into Tullaghan bay, on the north of Achill island.

**MUNSALU**, a town of Sweden, in the government of Wasa; 15 miles S. of Jacobstad.

**MUNSAPEETA**, a town of Hindoostan, in the Carnatic; 5 miles N. of Trichinopoly.

**MUNSEN**, a town of Hindoostan, in the country of Vissapour; 27 miles N. of Poonah.

**MUNSHOLM**, a small island of Denmark, in the Great Belt; 10 miles N.N.W. of Corfoer. N. lat.  $55^{\circ} 29'$ . E. long.  $11^{\circ} 6'$ .

**MUNSINGEN**, a town of Wurtemberg; 26 miles S.S.E. of Stuttgart. N. lat.  $48^{\circ} 25'$ . E. long.  $9^{\circ} 33'$ .

**MUNSTER, SEBASTIAN**, in *Biography*, a distinguished mathematician and linguist, was born at Ingelheim, in the Palatinate, in 1489, and after sustaining some time the character of a Franciscan monk, quitted that order, and embraced the reformed religion. He became professor of the Hebrew language and theology at Heidelberg, whence he afterwards removed to Basle to hold the like offices, where he died of the plague in 1552. He was one of the first among the German literati who attempted to improve the science of geography, and composed a book entitled "Cosmographia Universalis," which was printed in 1550, and translated into the Italian and other languages. A French edition was published at Paris in 1575, in two vols. folio, with corrections and additions. He was so celebrated as a geographer, and also for his knowledge in theology, that he was styled the Strabo and Estras of Germany. He constructed a map of the territory of Basle, and another of Germany, which was corrected and enlarged by Tilleman Stella in 1567. Munster was likewise great as a mathematician and astronomer. Montucla speaks of a treatise of geometry written by him, entitled "Rudimenta Mathematica," and he composed another on gnomonics, which the same author says is the foundation of the modern art of dialling. It was printed at Basle, under the title of "Compositio Horologiorum." In addition to these works, another is mentioned, viz. "Organon Uranicum," in which the author gives a theory of the planets, with their various motions, for more than 100 years. As a linguist, the following works are mentioned: "A Latin Translation of the Hebrew Bible;" "Grammatica Hebraica;" "Dict. Hebraicae Chaldaico-Latinum;" "Calendarium Hebraicum;" "Grammatica Chaldaica;" "Tabulae novae ad Geog. Ptolemæi," &c. Gen. Biog.

**MUNSTER**, in *Geography, a bishopric of Germany, bounded on the N. by Friesland and Oldenburgh, on the E. by the bishopric of Osnabruck, and counties of Diepholz, Tecklenburg, Lingen, and Ravensberg, on the S. by Westphalia, the counties of Mark and Recklinhausen, and duchy of Cleves; and on the W. by Holland, and the county of Bentheim. The country is level, having only a few eminences, but no mountains. Its heaths, which are extensive, serve for the breeding of cattle. It has fruitful plains, fine woods and turf, with good quarries of stone. Its rivers abound*



abound with fish. Of these the most remarkable are the Embs, the Lippe, the Vecht, and the Berkel. Between the bishopric and the county of Diepholz lies the "Dummer" lake, one German mile long, and half a league broad. At the commencement of the reformation, the Lutheran doctrine was received by many persons in this bishopric; but it was afterwards suppressed. In 1802, the bishopric was secularized, and given to the king of Prussia, but at the peace of Tilsit it was ceded to the kingdom of Westphalia.

MUNSTER, the capital of the above-mentioned bishopric, is situated in a fruitful and agreeable spot, on the river Aa, not far from the Embs. It was in the eleventh century that it obtained the name of Munster, from the collegiate church founded by Charlemagne. It is environed by double ditches and ramparts, and contains a citadel, called the "Brille." Among other churches is that of St. Lambert, on the tower of which were suspended, in iron baskets, John of Leyden, leader or king of the Anabaptists, and also both his princes. This city, which has undergone, in a succession of years, various calamities, is famous for a treaty of general peace, settled in the year 1658, and sometimes called the treaty of Munster, and also the treaty of Westphalia, because the plenipotentiaries were divided, and laboured at the same time at two places; the Swedes at Osnabruck, and the French at Munster. In 1802, it was given to the king of Prussia, with part of the bishopric, as an indemnity for his loss of Cleves, Gueldres, &c.; but at the peace of Tilsit it was surrendered to Westphalia; 65 miles N.N.E. of Cologne. N. lat.  $51^{\circ} 49'$ . E. long.  $25^{\circ} 6'$ .

MUNSTER, a town of the duchy of Wurzburg; 11 miles E.N.E. of Schweinfurt.—Also, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Colmar; 3 miles W.S.W. of Colmar. The place contains 2442, and the canton 11,351 inhabitants, on a territory of 160 kilometres, in 14 communes.—Also, a town of the county of Tyrol; 2 miles S.W. of Rattenburg.—Also, a town of the Grisons, from which is derived the name of a valley called "Munsterthal," in the league of God's House; 15 miles N. of Bormio.—Also, a town of the principality of Hesse; 4 miles S.S.W. of Butzbach.

MUNSTER, the southern of the four provinces into which Ireland is divided, which comprehends the counties of Clare, Limerick, Tipperary, Waterford, Cork, and Kerry.

MUNSTER-Éiffel, a town of France, in the department of the Roer; 24 miles S.E. of Juliers. N. lat.  $50^{\circ} 38'$ . E. long.  $6^{\circ} 41'$ .

MUNSTER-Meinfeld, a town of France, in the department of the Rhine and Moselle and chief place of a canton, in the district of Coblenz; 11 miles W.S.W. of it. The place contains 760, and the canton 4779 inhabitants, in 25 communes.

MUNSTERBERG, a principality of Silesia, encompassed by the principalities of Schweidnitz, Brieg, and Neisse, and the county of Glatz. The soil is good, and yields, besides flax, hemp, and wood, all sorts of grain, and in the vicinity of the capital, great quantities of hops. It affords also large breeds of good horned cattle and sheep. To the west and south it is mountainous, the Bohemian chain ending near the county of Glatz, and the Moravian chain commencing. This principality contains three boroughs, and one market-town. In 1653, Munsterberg, with the district of Frankenstein, was conferred by the emperor Ferdinand, as a fief, on John Weichard of Auerberg, by whose descendants it is still enjoyed. Its capital, of the same name, is situated on the Ohlau; its inhabitants are chiefly employed in the culture of hops; 31 miles S. of Breslau. N.

lat.  $51^{\circ} 26'$ . E. long.  $16^{\circ} 56'$ .—Also, a town of Prussia, in the province of Oberland; 18 miles E.N.E. of Marienwerder.—Also, a town of Prussia, in the province of Pomerania; 12 miles N.N.W. of Marienberg.—Also, a town of Prussia, in the province of Ermeland; 16 miles S.W. of Heiltperg.

MUNSURABAD, a town of Hindoostan, in Allahabad; 12 miles N.W. of Allahabad.

MUNTER, BALTHASAR, in *Biography*, a celebrated German divine, was born, in 1735, at Lubeck, where his father resided as a merchant. He was well educated, and obtained a high reputation at school, as well by his German poetry in general, as by two odes in praise of the Deity, which were regarded as happy presages of that celebrity to which he afterwards attained in sacred poetry. In 1754, he went to study at Jena, and in 1757 became a private teacher in philosophy. He entered his new career with great success, and the scantiness of his means induced him to make great exertions. He devoted himself to the church, acquired much popularity by his sermons, and was soon patronized by the duke of Gotha, who appointed him dean of the court. He now distinguished himself in print by some volumes of sermons, and by a treatise "On the Tree of Knowledge," which was written in answer to an accusation made against him for heresy. He was next appointed superintendant at Tonna, and in a short time he accepted an invitation to become pastor of a German congregation at Copenhagen. Here he published his "Conversations of a reflecting Christian with himself, on the Truth and Divine Origin of his Belief," a work which was extremely well received, even by those who thought differently from him in regard to many controverted points. He was exceedingly attentive to the religious instruction of youth, and composed a treatise expressly with this view, entitled "An Introduction to the Knowledge and Practice of Religion," which was said to be distinguished for its perspicuity and practical utility. In the year 1772, he attended the unfortunate count Struenzee during his imprisonment, and revived in his mind those sentiments of religion which he had imbibed in his youth, and which had not been entirely eradicated by a life of vicious indulgence. Munter published an account of Struenzee's conversion, which bears the strongest marks of the most disinterested attachment, and no work of modern times was read with so much avidity: it was circulated with the utmost zeal in foreign countries, and translated into the Danish, Swedish, French, and Dutch languages. In the year 1786, Munter sustained a severe stroke by the loss of his second son, who had been brought up to the sea-service, and who was drowned in the harbour of Bordeaux: he died himself in 1793, leaving behind him the character of an excellent husband, an affectionate father, and a sincere friend. Modesty and benevolence were the most striking features in his character. Gen. Biog.

MUNTERKINGEN, in *Geography*, a town of Wurtemberg, on the Danube; 16 miles S.W. of Ulm.

MUNTERLONEY, mountains of Ireland, in the county of Tyrone, separated by a valley from the Cairntogher mountains, which border on Londonderry.

MUNTINGIA, in *Botany*, named by Plumier in honour of a celebrated botanist, Dr. Abraham Munting, who succeeded his father, Dr. Henry Munting, in the botanical professorship at Groningen. This gentleman is known from various publications, but is more especially eminent for his treatise "De vera antiquorum herba Britannica," which he considers as a species of water-dock. He died, at the age of 57, in 1683.—Plum. Gen. 41. Linn. Gen. 264. Schreb. 351. Willd. Sp. Pl. v. 2. 1149. Mart. Mill. Dict. v. 3. Swartz,



Swartz. Obf. 211. Jacq. Amer. 166. Juff. 291. Lamarck Illuſtr. t. 468. Gærtn. t. 59.—Clafs and order, *Polyandria Monogynia*. Nat. Ord. *Columnifera*, Linn. *Tiliacea*, Juff.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, concave at the baſe, deciduous, deeply cleft into five, lanceolate, acute, large ſegments. *Cor.* Petals five, roundiſh, ſpreading, inſerted into the calyx. *Stam.* Filaments numerous, capillary, very ſhort, inſerted into the receptacle; anthers roundiſh. *Piſt.* Germen ſuperior, globoſe, clothed with ſoft hairs; ſtyle none; ſtigma capitate, five-ſided, radiated, permanent. *Peric.* Berry globoſe, umbilicated with the ſtigma, of five cells. *Seeds* numerous, roundiſh, very ſmall, imbedded in pulp.

Obf. Gærtner ſays that the berry has frequently more than five cells.

Eſſ. Ch. Corolla of five petals. Calyx deeply five-cleft. Berry with five or more cells, each containing many ſeeds.

1. *M. Calabura*. Villoſe Muntingia. Linn. Sp. Pl. 728. Plum. Ic. t. 205. Jacq. Amer. t. 107. (*Calabura alba*; Pluk. Phyt. t. 152. f. 4. *Loti arboris folio anguliere, rubi flore, fructu polyſpermo umbilicato*; Sloane Jam. v. 2. 80. t. 194.)—Swartz ſays that it is a native of calcareous hills in Jamaica, flowering in the ſpring. According to Jacquin, however, who reports that it is common in the damp woods of St. Domingo, it flowers in the autumn.—This tree generally riſes to the height of ten or fifteen feet, and, according to Sloane, even to thirty. The trunk is much branched, and covered with a ſmooth, dark purple bark. Branches irregular, ſpreading, long, hairy. Leaves alternate, on ſhort hairy ſtalks, ovato-lanceolate, pointed, rather unequally ſerrated, flat, ſpreading, green and hairy above, hoary and viſcid beneath, four or five inches long, unequal at the baſe. *Stipulas* ſolitary, thread-shaped, furniſhed with glandular hairs like the leaves. *Stalks* two to four, cluſtered, ſingle-flowered. Jacquin remarks that they ſucceſſively turn the flower, when it is about to expand, to the face of the leaf, which before was reflexed to the back. *Flowers* without ſcent, but handſome, reſembling thoſe of the bramble. *Berry* roſe-coloured, with a tinge of yellow; when cut in a tranſverſe direction, it ſeems to be one-celled, but if the pulp and ſeeds be gently preſſed out in water, it appears very clearly to be five-celled. *Seeds* whitish, or pale ſtraw-coloured. Sloane ſays the fruit is as big as a cherry, and Miller, that it is as large as that of the cockſpur hawthorn; of a dark purple colour when ripe.

Linnæus, in his Syſt. Veg. ed. 14. 490, has very unaccountably quoted *Mallam-taddali*, Rheed. Hort. Mal. v. 4. t. 40, as a ſynonym of *M. Calabura*, with which indeed it has nothing in common, except a ſlight reſemblance in the leaves.

MUNTISSUR, in *Geography*, a town of Bengal; 20 miles N.E. of Burdwan.

MUNYCHIA, *Μενυχία*, in *Antiquity*, an anniversary ſolemnity at Athens, upon the ſixteenth of the month Munychion, in honour of Diana, ſurnamed Munychia.

MUNYCHION, *Μενυχίων*, in *Chronology*, the tenth month of the Athenian year. It contained twenty-nine days, and answered to the latter part of our March and beginning of April. See MONTH.

It had its name from the feſtival Munychia, kept in it.

MUNZENBERG, in *Geography*, a town of Germany, in the county of Hanau Munzenberg; 19 miles S.E. of Wetzlar.

MUODGUR, a town of Hindooſtan, in the circar of Cicacole; 18 miles N.N.W. of Ganjam.

MUONIO, a river which riſes in the mountains of Nor-

way, and paſſing ſoutherly through Swediſh Lapland, joins the Tornea in N. lat. 67° 12'.

MUPHTI, MUFTI, or *Sbaik-iſlam*, the chief or patriarch of the Mahometan religion, reſiding at Conſtantinople.

The muphti is the ſovereign interpreter of the Alcoran, and decides all queſtions of the law: his deciſions are called “teſſas.” The ſultan has recourſe to him in all difficult and intricate caſes, and he promulgates no law, makes no declaration of war, nor eſtabliſhes any impoſt, without having obtained a teſſa.

He takes place of the baſhaw; and his authority is often terrible to the grand ſignior himſelf. It is he who girds on the ſword to the grand ſignior's ſide on his acceſſion to the throne, which ceremony answers to the coronation of our kings; reminding him at the ſame time of the obligation of defending the religion of the prophet, and of propagating his creed.

This eminent place might ſerve, without doubt, as a counterpoiſe to the almoſt abſolute and unlimited authority of the ſovereign: it might even frequently paralyſe it, if the ſultan had not the power of appointing the mufti, of depoſing him, of baniſhing him, and even of putting him to death after having depoſed him; and, indeed, it ſeldom happens that a mufti oppoſes the will of the ſultan and his miniſters. His teſſas are forced from him by the wiſh of preſerving his place, and by the fear of death; nevertheless, more than once, religious zeal and probity have induced ſome to preſent themſelves to the ſultan, and to make to him obſervations and remonſtrances: ſome even, more fanatic and more courageous, braving every danger, have reſuſed to condeſcend to his wiſhes. Hiſtory affords various examples of ſultans and vizirs killed or depoſed through the great influence of the muftis on public opinion: but it likewiſe preſents more muftis who have been victims of their zeal for religion, and of their attachment to the intereſts of the people. The mufti is much reſpected by the ſultan, and alſo by the people, who ſubmit blindly to his teſſas.

According to the eſtabliſhed order the mufti muſt be choſen from among the kadileſkers of Romania, and thoſe who have occupied that employment; and he remains in place as long as it pleaſes the ſultan to keep him there. In public ceremonies the mufti and the grand vizir are in the ſame line; the grand vizir on the right, and the mufti on the left. When the latter is diſgraced, he is not permitted to remain in the capital. The ſultan fears the influence of a man whom the people are accuſtomed to regard as the oracle of religion. He is baniſhed to ſome iſland of the Archipelago, or to ſome houſe ſituated on the Boſphorus, with a prohibition not to ſtir out of it, to receive any of the principal officers of the empire, or to correſpond with them. For an account of the kadileſkers, or cadileſchers, ſee CADILESCHER, and of the ſtambol-effendi, ſee STAMBOL-EFFENDI.

MUR, in *Geography*, a town of France, in the department of the Northern Coaſts, and chief place of a canton, in the diſtrict of Loudéac; 9 miles W. of it. The place contains 2096, and the canton 5248 inhabitants, on a territory of 130 kilometres, in 5 communes.

MUR-de-Barres, a town of France, in the department of the Aveyron, and chief place of a canton, in the diſtrict of Eſpalion; 30 miles N.E. of Rhodéz. The place contains 981, and the canton 7421 inhabitants, on a territory of 187½ kilometres, in 19 communes. N. lat. 44° 51'. E. long. 2° 44'.

MURA,



MURA, a river of Russia, which runs into the Tunguska, nearly opposite to Mureka.

MURA, a town of Sicily, in the valley of Noto; 15 miles S. of Modica.

MURABA, in *Biography*, a Brahman of the city of Poona, the capital of the Mahratta empire, in whose person and descendants is exhibited an extraordinary instance of priestcraft and superstition. He was of the sect of Gufain, or more correctly Gofwami; and is reported to have been so pious that the god Ganefa rewarded him by incarnating himself in his person, and covenanting that the divinity should descend to his children to the seventh generation: empowering the incumbent to work miracles, and, in a limited degree, to look into futurity. With this divine patrimony is inherited the guardianship of a sacred stone, a type of the Deity. In the year 1800, the venerated incumbent was visited by lord George Beresford, field-marshal Beresford, and Mr. Moor, the author of the Hindu Pantheon. The latter furnished a detailed account of this person, family, and visit, to the Asiatic Society, which is published, art. xiv. in the 7th volume of their Transactions, under the title of "Account of an hereditary living deity, to whom devotion is paid by the Brahmans of Poona, and its neighbourhood." The incarnation is represented to have taken place about the year 1640, and at the period of the above visit five generations had passed away. Gabaji Deva, that is, the Lord, or Divine Gabaji, was the then incumbent. He has since died, and it is agreed by the Brahmans, that the avatara, or manifestation (see MAYA,) will end with the life of the next inspired portion of carnality, unless perpetuated or renewed by a farther miraculous interposition of the divine will. Great respect, indeed adoration, is paid by the Peshwa, (see PESIWA,) and of course all other Brahmans about Poona, to this sanctified inheritor of the gift of prophecy, as related at length, with many other particulars of gross superstition, in the article above referred to.

Lord Valentia has more recently visited this venerated personage, who resides in the abode of his ancestors at the town of Chinchur, about a dozen miles from Poona; and has given the particulars of his visit in the second volume of his Travels, p. 156; together with some respecting the family and person of the Deo (or Lord,) differing from the information received by the preceding author.

The Hindoo deity Ganefa, thus incarnated, is the god of prudence and policy: he is otherwise called *Pollear*, under which article some notice of him will be found.

MURACH, in *Geography*, a town with a castle of Bavaria, in the Upper Palatinate; 7 miles E. of Nabburg.

MURÆNA, the Eel, in *Ichthyology*, a genus of fishes of the order Apodes, of which the generic character is; head smooth; nostrils tubular; gill-membrane with ten rays; eyes covered with a common skin; body round, smooth, mucous; caudal, dorsal, and anal fins united; spiracle behind the head or pectoral fins.

This genus seems to make a very near approach to the reptile class; for in the eel, as in reptiles, the body is long, slender, and flexible; and excepting the small pair of pectoral fins, it may be said to be without fins, inasmuch as the dorsal, anal, and tail fins are united in one web, which surrounds a large portion of the body. The apertures of the gills are small, and placed behind the pectoral fins. The eel differs from almost all other fish of that order in the mode of generation, and stands at the top of it in almost all classifications. It is viviparous, and is impregnated in the same manner as obtains among the cartilaginous tribes. The ancients entertained very extravagant ideas respecting

the generation of these animals: some of them asserted that in the eel tribe there were neither male nor female, hence it was inferred that they sprung from the mud, or that the incrustation scraped from their bodies received animation. This opinion was rashly adopted from having observed that they were generated in pools, from which all the mud and water had been some time drawn off. This was a phenomenon, for which they could not account otherwise than by admitting the spontaneous generation of eels; but later and more accurate observations have shewn, that ponds are frequently supplied with these fish, in the same manner that vegetation is spread, by transporting the seeds of plants. It has been thought that the heron and other water fowl may drop the eel, when carrying it to its young, or if swallowed by them alive and uninjured, the digestive faculties having no power over them, may be ejected from its stomach, as the seeds of plants are voided by land animals, without being in the smallest degree affected by the process. In their habitation, the fishes of this genus are still more singular, than in the mode of propagating their young. They can reside either in salt water or in fresh, and what is still more surprising, they are, in some measure, independent of either; for they have been known not unfrequently to leave their native element, and wander, during the night, along the moist meadows, not only for an exchange of habitation, but, it is believed, in quest of prey. Of these nightly excursions, the snail and the slug are the victims, being devoured by eels as they pass along. In the water no animal is more vivacious than the eel, and even when taken from its natural element it clings to life most tenaciously: it will survive blows that would deprive animals ten times its size of life in an instant: after it is skinned, and even cut to pieces, it exhibits signs of life some time. It is, however, easily affected, and destroyed by cold, of which it is so well aware, that to avoid its effects, it beds itself deep in the mud, and continues in a torpid state during the winter. Though fond of hiding themselves in the mud to answer their own purposes, they are said to be incapable of living long in thick turbid water; and hence, when a river is disturbed by land floods, they are frequently suffocated by the impurity of the stream. This genus includes nine species according to Gmelin, but Dr. Shaw describes eleven, of which the following is an account.

#### Species.

HELENA, or Romana; the Roman Eel. No pectoral fins; the body is variegated; there is a variety spotted with black and green. This fish, the celebrated favourite of the ancient Romans, is found in great plenty about the coasts of the Mediterranean. Its colour is a dusky greenish-brown, thickly variegated on all sides with dull yellow marks or patches; the head is rather small; the mouth moderately wide, and the teeth sharp; the dorsal and caudal fins, which are shallow, and covered by the common skin, are united, in the same manner as in the eel, and are of a dusky colour with whitish spots. The ancients, who kept it in reservoirs appropriated for the purpose, are said to have tamed it to such a degree, as to come at a call to receive its food. It inhabits other European seas besides the Mediterranean, and some American seas; it is exceedingly voracious, and bites dangerously. See GYMNOTHORAX.

COLUBRINA; Snake Eel. No pectoral fins; body alternately annulate, with yellow and black bands: a variety of this species is distinguished by brown irides with black spots. This is a native of the Indian seas, particularly about the coast of Amboina: it is about two feet long; the colour is pale or yellowish-white; marked throughout by



by numerous equidistant wideish bands of black or brown, passing through the fins; the body, when examined with magnifiers, is found to be covered with very small scales; the snout is sharp-pointed, and the eyes are very small.

**MELEAGRIS**; Speckled Eel. Body blackish, thickly spotted with white: it is about two feet long, of a deep brown colour, thickly beset on all parts with almost innumerable small white round spots, which are less regular, or more confluent on the head and breast than elsewhere. The eyes of this species are small; the mouth is wide; and the teeth sharp and numerous. It is a native of the southern ocean.

\* **OPHIS**; Spotted Sea-Serpent. Body slender, spotted; tail round, spear-shaped, naked. This species grows to the length of between three and four feet; it is found in European seas; the body is small in proportion to its length; the mouth is large; teeth pointing inwards; back spotted with white; belly and fins whitish.

**SERPENS**; Serpent Eel. Tail naked, pointed; body round. It inhabits the southern European seas; the pectoral fins with about twenty-six rays.

\* **ANGUILLA**; Common Eel. In this species the lower jaw is the longer; and the body is of one colour. In *muddy* waters it is black, beneath yellowish; in *gravelly*, clear waters, it is green or brownish; beneath silvery, sometimes varied with brown lines; the head is small, and narrowed on the fore-part; the mouth is large; beneath the eye is a small orifice, and at the end of the nose two others, small and tubular; the teeth are small, sharp, and numerous; the eyes are small, near the end of the nose; aperture of the gills semilunar; body a little compressed; lateral line straight, dotted with white; skin covered with soft oblong scales; the pectoral fins are small, round, paler, with about nineteen rays, dorsal, caudal, and anal fins united, frequently edged with white. It is found almost every where in fresh waters, grows sometimes to the length of six feet, and has been known to weigh as much as twenty pounds: in appearance and habits it resembles the serpent tribe: during the night it wanders into meadows in search of snails and worms, buries itself deep in the mud in winter, and continues in a state of rest: it is impatient of cold, and tenacious of life: the flesh of those that live in running streams is very good: it is viviparous, producing the young during the decline of summer, which at their first exclusion are very small. In some parts of Europe the eel-fishery is of surprising magnitude. Dr. Bloch says, that in some places near the mouths of the Baltic, so great a quantity is taken, that they are salted for exportation, and conveyed by waggons-loads into Saxony, Silesia, &c. Two thousand have been taken in Jutland at a single sweep of the net; and in the Garonne 60,000 are said to have been taken in a day by a single net.

\* **MYTUS**; Flat-tailed Sea-Serpent. Fin surrounding the lower part of the body white, edged with black; a variety of this species is entirely cinereous. It is found in European seas; the head is narrowed on the fore-part; two short tentacula on the upper lip; back dark olive spotted with white; body compressed. The second variety has been suspected of being poisonous.

\* **CONGER**; Conger Eel. Lower-jaw rather shorter than the upper; nose with two tentacula; lateral line whitish, with a row of spots. It is found in European seas and rivers; is extremely voracious, feeding on other fish, crabs in their soft state, and particularly on carcases, grows as long as from four to ten feet; some specimens, we are assured, have been found to weigh a hundred pounds. A fishery of congers, at Mount's-bay in Cornwall, forms a

considerable article of commerce. They are annually exported, in a dried state, to Spain and Portugal, where, being reduced to powder, they are used for enriching soup.

**GUTTATA**; Spotted Muræna. Glaucous speckled with black, with a larger spot each side near the head. It is found in the Arabian seas; it has a callus between the eyes, gold-coloured irides; the upper lip is shorter than the lower, and the dorsal and anal fins are united at the tail.

Such are the species described by Gmelin in the Muræna genus; some later naturalists have given a distinct genus, called the **ANGUILLA**, including with the common eel, the conger, the ophis, the serpens, and the mytus. These persons give in the Muræna genus the following species, *viz.* the catenata; reticulata; africana; zebra; and echidna; which have been described under the word **GYMNOTHORAX**.

**MURÆNA** is used by Albertus for the common small lamp-fern, the *lampetra parva fluviatilis* of authors. This is one of the petromyza of Artedi, and is distinguished by the having only one row of very small teeth in the verge of the mouth, besides the larger lower ones.

**MURAGE**, **MURAGIUM**, in our *Customs*, a reasonable toll to be taken of every cart or horse coming laden into a city or town, for the building or repairing the walls thereof.

**MURAJAMA**, in *Geography*, a town of Japan, on the W. coast of Nippon; 60 miles S. of Achita.

**MURAKWA**, a town of Poland, in the palatinate of Braclaw; 28 miles W. of Braclaw.

**MURAL**, something belonging to a wall; which the Latins call *murus*.

**MURAL Crown**, among the ancient Romans. See **CROWN**. **MURAL Arch** is a wall, or walled arch, placed exactly in the plane of the meridian, *i.e.* upon the meridian line, for the fixing of a large quadrant, sextant, or other instrument, to observe the meridian altitudes, &c. of the heavenly bodies.

Tycho Brahe was the first who used a mural arch in his observations; after him Hevelius, Mr. Flamsteed, De la Hire, &c. used the same means. See a description of the mural arch at Greenwich, constructed by Mr. Graham, in Smith's Optics, book iii. c. 7. with the improvements of Mr. Bird, in the Method of constructing Mural Quadrants, published by the commissioners of longitude, 1768: and for that of Mr. Troughton, see **QUADRANT**.

**MURALT**, **JOHN**, in *Biography*, an intelligent and industrious physician, was a native of Zurich, and descended from an ancient family in that city. He commenced his studies at Montpellier, and afterwards went to Leyden and to Paris, in which capital he attended chiefly to midwifery and anatomy, under the tuition of Mauriceau and Gayant. On his return to Zurich, he practised all the branches of the healing art; and also gave lectures in natural philosophy, anatomy, and surgery. He was instrumental in establishing an anatomical theatre in this city, and frequently gave demonstrations, by dissection, both in human and comparative anatomy. He acquired a general reputation and esteem among his fellow citizens, and died much regretted in 1733. He was author of a considerable number of papers, printed in the *Acta Academiæ Naturæ Curiosorum*, of which society he was admitted a member, under the name of Aretæus. These memoirs relate principally to comparative anatomy. He likewise published the following works. "Vade mecum Anatomicum, five, Clavis Medicinæ," Tigur. 1677; which was reprinted in Amsterdam, in 1688, under the title of "Exerci-



"Exercitationes Anatomicæ observationibus et experimentis anatomicis mixtæ." The experiments and observations relate to the chyle, milk, lymph, bile, blood, and other humours, and some of them are original; but he claims other discoveries which have not been allotted to him. "Collegium Anatomicum," Nuremb. 1687; "Zoologia," Tigur. 1709; "Phylices specialis quatuor Partes, five, Helvetiæ Paradisus," ibid. 1710. This work contains a catalogue of the plants that grow on the mountains round Zurich, many of which had not been described before; but he was not always correct in his nomenclature. Eloy Dict. Hist. de la Med. Gen. Biog.

MURALT, BEAT-LOUIS DE, a native of Berne, after travelling with a penetrating and philosophical eye through several parts of Europe, made himself known by his "Lettres sur les François et sur les Anglois," in two vols. 12mo. He wrote also fables, and other works, which, though not very excellent, suited the taste of the times, and were much read.

MURANO, in *Geography*, a small island in the gulf of Venice, with a town of the same name, which is the see of a bishop, and contains 15 churches; N. of Venice.

MURARAT, a mountain of Transylvania, on the borders of Servia; 48 miles S. of Hunyad.

MURARI, a name of the Hindoo deity Krishna, or Vishnu; which see.

MURASZERDA, in *Geography*, a town of Hungary, on the river Muhr; eight miles N.N.E. of Csakathura.

MURAT, a town of France, and principal place of a district, in the department of the Cantal; seven miles W.N.W. of St. Flour. The place contains 2557, and the canton 13,000 inhabitants, on a territory of 302½ kilometres, in 12 communes. N. lat. 45° 7'. E. long. 2° 56'.—Also, a town of France, in the department of the Tarn, and chief place of a canton, in the district of Castres; nine miles E. of La Caune. The place contains 3024, and the canton 4116 inhabitants, on a territory of 165 kilometres, in two communes.

MURATORI, LODOVICO ANTHONIO, in *Biography*, a learned Italian writer, was born at Vignola, in the duchy of Modena, in the year 1672. He was observed, even in his infancy, to have a passion for reading, which was imbibed from perusing the romances of Madame Scudery, which by accident, at that early period, fell in his way. At the age of 13 he was sent to the Jesuits' school at Modena, where he daily stole from his sleep several hours to allot to his studies, and from this time to his death he restricted himself to seven hours rest out of the 24. At his own desire he was devoted to the service of the church, and received the tonsure from the bishop of Modena in his 16th year. Having completed his course at school, he entered upon the studies of the university, and cultivated with great eagerness polite literature and poetry; and in a short time afterwards made great proficiency in the study of the Greek. In 1695 he was appointed one of the prefects of the Ambrosian library at Milan, having previously received the degree of doctor of laws at Modena. He was soon after, ordained priest, and, in a manner, shut himself up amidst the treasures of that celebrated repository. His researches enabled him to make those collections of curious literature, which he afterwards gave the world under the titles of "Anecdota Latina," and "Anecdota Græca." At this time he began to make a collection of inedited inscriptions, and other remains of antiquity; and for the purpose of promoting philosophy and letters, he procured the institution of an academy in the Borromean palace. While thus employed, he was called by the duke of Modena to return

thither, and take the office of keeper of the archives of the house of Este, to which, at his own desire, was added the office of ducal librarian. He returned in the year 1700, and in two years his labours were interrupted by the wars in Italy, and it was thought necessary to remove the archives to a safer place on the approach of the French, who soon made themselves masters of Modena. They treated Muratori with respect, and offered him the office of royal librarian, which he refused. In 1714, 15, and 16, he took several journeys into Italy for the purpose of collecting new materials for memoirs of the house of Este, and that of Brunswick, which derives its origin from it. In this business he was engaged as well by king George I. of Great Britain, who furnished him with letters of recommendation, as by the duke of Modena. On his return he received the benefice of provost to the church of St. Maria Pomposa, in Modena, and in the discharge of the duties attached to this office, he conducted himself so as to afford a model for parish priests, in acts of kindness and charity to all those who were the objects of them. He instituted a society for the protection of the widow, the orphan, and the destitute, and at his death bequeathed a large sum for its support. So benevolent was he on every occasion which he thought demanded pecuniary aid, that it was found after his death he had given away to the poor, and expended upon his churches much more than he had received from all his benefices conjointly. These offices of duty and kindness naturally attached him to the place of his residence, and no offers, however splendid, of which he had many, could tempt him to quit Modena, where he lived in high esteem. Of his labours in the cause of literature we have the testimony of Gibbon, who acknowledges Muratori to have been "his guide and master in the history of Italy."—"His country, and the public," says the historian, "are indebted to him for the following works on that subject. 1. *Rerum Italianarum Scriptores* (A. D. 500—1500) *quorum potissima pars nunc primum in lucem prodit*, &c. 28 vols. in folio, Milan, 1723—1738, 1751. A volume of chronological and alphabetical tables is still wanting as a key to this great work, which is yet in a disorderly and defective state. 2. *Antiquitates Italiæ mediæ ævi*, 6 vols. in folio, Milan, 1738—1743, in 75 curious dissertations on the manners, government, religion, &c. of the Italians of the darker ages, with a supplement of charters, chronicles, &c. 3. *Dissertationi sopra le Antiquità Italiane*, 3 vols. in 4to. Milano, 1751, a free version by the author, which may be quoted with the same confidence as the Latin text of the Antiquities. 4. *Annali d'Italia*, 18 vols. in octavo, Milan, 1753—1756, a dry though accurate and useful abridgment of the history of Italy, from the birth of Christ to the middle of the eighteenth century. 5. *Dell' Antichità Estense et Italiane*, 2 vols. in folio, Modena, 1717—1740. In the history of this illustrious race, the parent of our Brunswick kings, the critic is not seduced by the loyalty or gratitude of the subject. In all his works, Muratori approves himself a diligent and laborious writer, who aspires above the prejudices of a Catholic priest." It was an early idea of our author to institute a literary republic in Italy, which should associate all the men of letters into one body; for this purpose, he wrote various addresses to the public, under the fictitious name of Lamindo Pritanio, in which he proposed his plan, and pointed out the advantages that would probably result from such an institution. The subject was amply discussed, but the idea was never realized. In 1706 he published a work, entitled "Della perfetta Poesia Italiana," in two volumes, which gave rise to a considerable controversy, as might be expected, in a country in which different poets of



high celebrity had formed different schools of admirers, pupils, and imitators. In 1735 Muratori wrote a treatise on "Moral Philosophy," which was several times reprinted. It was followed by a treatise on the powers of the human mind, intended as an answer to Huet's tract on the weakness of the human mind. He carried his enquiries into medical subjects, and on the appearance of a pestilential disorder in Germany in 1713, he published a work, entitled "Governo della Peste," in which he treated on the office of the magistrate, the physician, and the divine, during the awful visitation of the plague. To a new edition of this work in 1721 was added a relation of the plague of Marseilles. In 1742 he published a curious work, "Dei Difetti della Giurisprudenza," which was connected with his pursuits in history and antiquities, and these were the objects of his favourite studies. As a theologian he raised a formidable storm against himself in controversial divinity, the ground of which was the immaculate conception of the Virgin Mary. He endeavoured to moderate the zeal of the combatants, and in so doing he acquired the reputation of a heretic, and found it necessary to write an epistle in his own vindication to Benedict XIV. Muratori was author of another celebrated but obnoxious work, entitled "Della Regola e Divozione dei Christiani," printed in 1747, under the feigned name of Lamindo Pritanio. In this he went as far as he durst in avowing himself hostile to vulgar superstition, and on that account made himself many enemies. Muratori was author of many other works besides those that have been mentioned above, particularly of lives of eminent persons, as of Petrarch, Paolo Segneri, &c.; and of various dissertations on antiquarian subjects. His reputation as a writer extended throughout Europe, and he was, by means of a good constitution and excellent health, enabled to continue his various labours till a very advanced period of life. He died in January 1750, in the seventy-eighth year of his age, and various tributes of high respect were paid to his memory, by persons of all parties of different countries. Gibbon. Gen. Bioz.

MURAWA, in *Geography*, a town of Hindoostan, in Bahar; 36 miles S.W. of Arrah.

MURCA DE PUNOYA, a town of Portugal, in the province of Tras los Montes; 12 miles S.S.W. of Mirandela.

MURCH, a town of Hindoostan, in Bundelcund; 45 miles N. of Callinger.

MURCHA, a town of Bengal; eleven miles N.E. of Moorshedabad.

MURCHAPOUR, a town of Hindoostan, in the circle of Ellichpour; 20 miles N.E. of Akowla.

MURCIA, in *Botany*, (or MYRCIA, for it is printed both ways within two pages of each other,) a name proposed by Linnæus, for several species of *Myrtus*, in his *Flora Zeylanica*, p. 81—83, which he suspected might constitute an intermediate genus between *Myrtus* and *Caryophyllus*; but he has indicated no sufficient character to distinguish it, nor has he, or any one else, subsequently established this supposed genus. See MYRTUS.

MURCIA, in *Geography*, one of the smallest provinces of Spain, though called a kingdom, is about 30 leagues from the N.W. to the S.E., and 20 from the S.W. to the N.E., and is bounded by the kingdom of Valencia on the E., La Mancha and New Castile on the N. and W., the kingdom of Juan on the W., that of Granada on the W. and S., and the Mediterranean sea on the E. and S.E. It is a dry, hilly country, almost covered with mountains of various elevations, which are separated in some parts by dry parched up vallies, and elsewhere by others of more than common beauty and fertility. It contains a bishopric, a cathedral chapter, a

collegiate chapter, six commanderies of military orders, ninety-one convents, twelve hospitals, two asylums, three colleges for the education of youth, two military governments, one of the three grand departments of the royal navy, an intendant of the province, an intendant of the navy, six cities, sixty-four towns, seven villages, and some hamlets. It has two ports in the Mediterranean, the smallest being that of Las Agailas, and the other the largest and most important in the whole of Spain, which is Carthagenia. Its principal towns, besides Murcia, the capital and episcopal see, are Carthagenia, a fortified town and formerly an episcopal see, Lorca, Chinchilla, Albacete, Villena, and Almanza. This province is watered by two streams, the Benamor and the Guardavar, and by two rivers, the Segura and the Guadalentia. The most remarkable of its mountains, which are branches of the Montes-Oropedani, are the Sierra of Penas, Pinosa, Lofillas to the W., that of Chinchilla to the N.W., those of Montes Agudo, Covatellos, and Orihuela to the N.E., the Sierra of Almanza to the N., that of El Cano to the S., of Espana to the S.W., and of Carascoy to the S.E.

The kingdom of Murcia was the first part of Spain that was occupied by the Carthaginians, who formed in it their first colony, and built a town, the foundation of which is ascribed to Asdrubal, A. U. C. 562; and it is now called *Carthagenia*; which see. This country was afterwards wrested from the Carthaginians by the Romans, of whose possession there remains the evidence of a military road, called by the people of the country the road of Hercules. Being afterwards taken from the Romans by the Goths, this country formed a part of the monarchy which the latter established in Spain; but it was laid waste by the Vandals, who completely destroyed Carthagenia, which was afterwards rebuilt on account of its harbour. By the revolution which happened in 552, the maritime part of the kingdom of Murcia fell under the empire of the Greeks, who retained possession of it until the year 624, when it reverted to the Goths. The Arabs in their turn seized this province, and became masters of it by a treaty of peace signed in 715. In 1144, Murcia was annexed to the kingdom established by the Moors, the capital of which was Granada; but in 1221, it became subject to the kings of Cordova, and formed a separate state. In process of time, Alphonso X. restored it to the king of Castile, having dispossessed Aben Hudiel, to whose sovereignty it was subjected by the dissolution of the kingdom of Cordova in 1236. Alphonso transferred the title and honour of king to Mahomed, the Moor, who was the last who held that appellation in Murcia. Since that time this country has belonged to the crown of Castile, and has been under the same government and laws with the other provinces of this crown. This province has never been thoroughly re-peopled since the expulsion of the Moors. According to the enumeration in 1787 and 1788, its population consisted of 337,686 inhabitants; a number very inadequate to the extent of the province, which is about 1100 square leagues. The land is divided into Campo, meaning dry land, Huerta or watered land, both of which are plains, and a third portion which comprehends mountains and vallies. The Huerta is uncommonly fertile, and well cultivated; the Campos have as good soil, but want irrigation. The chief production of Murcia is corn, consisting of wheat and rye. Kali is an object of no small importance; there are also vineyards, which yield a considerable quantity of wine. Spart is also cultivated, chiefly in the country about Carthagenia, and furnishes an article of exportation. Saffron is also an object of some importance. Olive and mulberry trees are common. The hemp



kemp is of a superior quality; but it is not much cultivated. This province possesses the raw materials of several manufactures, as of linen and silk; but the manufactures are in a low state. Other articles, such as soap, earthen-ware, cutlery, and brandies, are too inconsiderable to deserve particular mention. The commodities of Murcia are too few and insignificant to support a foreign commerce of any great extent. There are three great fairs every year in this province, *viz.* at Albacete, Lorca, and Murcia, which last several days. Murcia presents an extensive field for natural history. Of lead, copper and silver mines there are various traces. The province affords sulphur, nitre, alum, bole, rock-crystal, marble, and various mineral waters. The climate of this province is much commended; the atmosphere is seldom cloudy, fogs are unknown, and rain is very rare. The arts and sciences are little encouraged in this province. The distinguishing character of the inhabitants is indolence.

MURCIA, the capital of the kingdom or province of the same name. This town is of late origin, as it does not appear in history till the beginning of the eighth century, from which time it frequently changed its masters, until the year 1265, when Alphonso X., king of Castile, having taken possession of it, fortified it, and peopled it with Catalonians, Aragonese, and principally with French. Two circumstances give it some degree of celebrity. When it was besieged in 734 by Abdelazis, a Moorish general, it was in want of men to defend it. On this occasion, the women, habited like men, were placed by the governor upon the ramparts, and obtained an honourable capitulation. In 1706, this town held out for Philip V.; but it was open and defenceless; but its bishop assembled, and roused the people of the neighbourhood, placed himself at their head, and prepared to defend it; but still dreading the force of a large army, he opened the reservoirs, cut the canals, turned the river Segura; and thus inundated the whole surrounding country. Having thus secured Murcia, the bishop with his army marched against Carthage, and compelled it to surrender. For this exploit, he was created a cardinal.

Murcia is situated in a large and beautiful valley, watered by the river Segura; its population is computed at 60,000 persons, including those who inhabit the Huerta, or neighbouring country dependent upon it, who are supposed to amount to a third part of the whole. It is the see of a bishop suffragan to the archbishop of Toledo, which see was removed hither from Carthage in 1291. Its diocese includes almost the whole present kingdom of Murcia; and the revenue of the bishop is equal to 22,916*l.* 13*s.* 1*d.* sterling. The town has 11 parishes, 10 convents of monks, nine convents of nuns, three colleges for the secular clergy, two hospitals, and an asylum or penitentiary house. It has generally a garrison of two squadrons of cavalry, and is the chief place of an intendant of the whole kingdom of Murcia. Its public establishments are a custom-house, a board of public economy, two public libraries, a curing-house for saltpetre, gunpowder mills, some silk manufactories, and a considerable establishment for spinning and twisting silk. It was formerly fortified, but is no longer walled. Its suburbs are pleasant, communicating with the town by two bridges. The houses, being badly built, exhibit an indifferent appearance; many of them are ancient, loaded with ornaments of architecture and sculpture in bad taste. Its squares are numerous, it has many churches, and its cathedral is magnificent. The promenades of Murcia are four; *viz.* the Arsenal, the Botanic garden, the Alameda, and the Malecon; but they are of little use, as the Murcians seldom walk, but stay at home, smoking cigars, and sleeping. In Murcia there are three colleges for education, and two public libra-

ries. Its manufactures are such as have been mentioned in the preceding article; and it merely shares in the commerce of the province. Ignorance and sloth, says M. de Laborde, render the manners of this town disagreeable; prejudices run high, and the inhabitants are extremely litigious. The Murcian women, however, are mild and affable, and would be fond of society, if their liberty were not restrained by the authority and dispositions of their husbands. For want of lamps, it is dangerous to perambulate the streets at night. In summer the heat is extreme, Fahrenheit's therm. being often at 99°, and in winter it is hardly ever necessary to have recourse for warmth to the fire. The complexion of the Murcian, indolent, as we have already said, in his habits, is often livid; he is sad, gloomy, choleric, hypochondriacal, and subject to diseases of the liver. At Murcia there are no inns, the want of which is a serious inconvenience on the road from Madrid to Carthage, and on that from Catalonia and the kingdom of Valencia, into Andalusia; 96 miles S.S.W. of Valencia. N. lat. 37° 57'. W. long. 1° 20'.

MURCIA, in *Mythology*, the goddess of Sloth, who disposed her votaries to indolence. Her temple, according to Festus, was upon the Aventine mount.

MURCIELAGOS, in *Geography*, two small Philippine islands, near the N. coast of Mindanao. N. lat. 9° 13' E. long. 122° 28'.

MURDER. See MURDER.

MURDERER'S BAY, in *Geography*, a bay on the W. coast of New Zealand; so called by Taitman in commemoration of some of his crew being murdered there by the natives, in December 1642; between Cape Farewell and Rocky Point. S. lat. 40° 49'.

MURDERING BATTERY. See BATTERY.

MURDGUR, in *Geography*, a town of Hindoostan, in the circar of Cicacole; 18 miles N.N.W. of Ganjam.

MURDGURRY, a town of Hindoostan, in Myfore; 20 miles E.S.E. of Sirpy.

MURE, a cape on the W. coast of the island of Corfica; 13 miles S.S.W. of Ajazzo.

MURE, *La*, a town of France, in the department of the Isère, and chief place of a canton, in the district of Grenoble; 18 miles S. of it. The place contains 1686, and the canton 8309 inhabitants, on a territory of 182½ kilometres, in 20 communes.

MURE, in *Rural Economy*, a term applied to the cakes of apples, grapes, &c. left in the press, after extracting the juices.

MURE, *Counter*. See COUNTER-mure.

MUREKA, in *Geography*, a town of Russia, in the government of Tobolsk, on the Tunguska; 192 miles E. of Eniseisk. N. lat. 58° 30'. E. long. 98° 14'.

MURENGERS, two officers of great antiquity in the city of Chester; being two of the principal aldermen chosen yearly to see the walls kept in good repair, and to receive a certain toll and custom for the maintenance thereof.

MURENZKOI, in *Geography*, an ostrog of Russia, in the government of Irkutsk, on the Lena. N. lat. 60° 31'. E. long. 114° 50'.

MURES, a town of Spain, in Asturias; 17 miles N.N.W. of Oviedo.

MURET, MARK-ANTHONY, or MURETUS, in *Biography*, an eminent classical scholar, was born in 1526, at a town of the same name as that by which he is known, near Limoges. With but little assistance, in the way of a preceptor, he acquired the Greek and Latin languages at an early age, and in his eighteenth year he went to Auch to read lectures on Cicero and Terence in the archbishop's seminary. He visited the famous Julius Cæsar Scaliger at Agen, by whom



he was recommended to the magistrates at Bourdeaux, where he taught the belles lettres in 1547. He left that city for the capital, where he was made one of the professors in the college of St. Barbe, and acquired so much reputation by his lectures, that the king and queen came to hear him. From Paris he went to Touloufe, where he studied the civil law, and explained its elements. He had been driven from the metropolis by the imputation of a crime, which in very few countries meets with any quarter; the charge followed him to Touloufe, and obliged him hastily to remove to Venice. That the accusations were unfounded, has been inferred from the favourable reception which he met with in Italy, even from popes and cardinals; and also from the regularity of his life in that country, which was his principal residence from the year 1554. At Venice he taught publicly, at a very considerable salary, and from thence he was sent to Padua, to instruct the Venetian youth in classical literature, and there he contracted an intimacy with Bembo, Manuzio, and other eminent Italian scholars. In 1560, he was invited to Rome by cardinal Hippolito d'Este, whom he accompanied in his legation to Paris. Here he printed his edition of Cicero's Philippics, and on his return to the capital he continued to reside with the cardinal, who engaged him, in 1563, to write commentaries upon Aristotle's morals, which he performed during four years, with great applause before a very numerous audience. He afterwards gave lectures on the civil law; and at the desire of pope Gregory XIII., explained several of the principal classical authors. In 1576, though at the age of fifty, he took holy orders, after which, Stephen Battori, king of Poland, invited him to his kingdom upon very advantageous terms, but Gregory, at the earnest request of the conservators of the Roman people, having doubled his appointments, the literature and society of Rome turned the scale, and he declined accepting the offer. He died at Rome in 1585, and was buried with extraordinary funeral honours. Muret was one of the most elegant Latin writers of his time; he was likewise a man of general erudition, and well versed in that sort of knowledge which is requisite for a critic on the writings of antiquity. It is to his disgrace, that he wrote in praise of the horrible massacre of St. Bartholomew, published in his panegyric of the hateful Charles IX. His works were published collectively at Verona in 1727—30, in five volumes octavo. They consist of notes on various authors, orations, letters, poems, disputations, &c. His place is rather among men of letters, than men of genius.

MURET, in *Geography*, a town of France, and principal place of a district, in the department of the Upper Garonne, seated on the Garonne; nine miles S. of Touloufe. The place contains 3141, and the canton 12,562 inhabitants, on a territory of 227½ kilometres, in 19 communes. N. lat. 43° 27'. E. long. 1° 25'.

MUREX, in *Natural History*, a genus of the class Vermes, and order Testacea. The generic character is; animal a limax; shell univalve, spiral rough, with membranaceous futures; aperture oval, ending in an entirely straight or slightly ascending canal. This genus is separated into six distinct divisions, containing in the whole more than 180 species, scattered through the different seas of the globe: of these, seven or eight only are common to our own coasts.

#### A. Spinous, with a produced Beak.

##### . Species.

HAUSTELLUM. Shell ovate tuberculate, with a long subulate muricate beak. There is also a variety of this

species. It is found in Asia, America, and in the Red sea: it varies much in the colour and length of its tubercles on the beak; the aperture is rounded, generally rosy, the mouth is sometimes white, sometimes blueish.

TRIBULUS; Thorny Woodcock. Shell ovate, with a triple row of setaceous spines, the beak elongated subulate, with similar spines. Of this species there are two varieties: 1. With spines shorter than the beak. 2. With spines as long or longer than the beak. It inhabits the same seas as the last, but is rare. The shell is whitish or reddish, transversely striate.

CORNUTUS. Shell roundish, and surrounded with subulate oblique spines, beak long subulate straight, with a few short spines. It is found on the southern coasts of Africa, but is not frequently met with. The shell is eight inches long, transversely striate, white, yellow, or pale chefnut, within it is rosy; spines are two inches long, the whorls rounded and inflated.

BRANDARIS. Shell sub-ovate, surrounded with straight spines; beak moderately long, subulate straight, and obliquely surrounded with spines. It inhabits the Mediterranean and Adriatic seas; the shell is white, cinereous, or brownish, with a triple row of small spines, the third row shorter, rarely a single row with the beak unarmed.

TRUNCULUS. Shell ovate, knotty, and surrounded with spines on the fore-part; beak short, perforate, and truncate. Found in the Mediterranean and in Jamaica; the shell is variable in colours, sometimes barred and transversely striate; beak sometimes straight, sometimes bent to the left.

POMUM. Shell ovate, knotty, with protuberances from three to seven; the beak is broad. It inhabits the eastern shores of Africa; is coarse and ponderous.

DECUSSATUS. Shell ovate, transversely grooved, with convex ribs, crossed by perpendicular knots; beak imperforate. Found on the eastern coasts of Africa. The margin of the lip of this species is membranaceous; the spire has seven distinct whorls.

TRIACANTHUS. Shell turgid, knotty, transversely striate, with a triple row of spines. Found in a fossil state; shell shaped like a fig, with five or six horizontal belts crossing the striæ; beak above an inch long; the three outmost whorls knotty, and a little prominent.

MELANAMATHUS. Shell transversely striate, with eight rows of hollow black spines; spire a little knotty and prickly; beak subulate. The place of its habitation is not known.

RADIX. Shell white, with numerous rows of frondose black undulate spines; this is extremely rare, and its habitation not ascertained.

CANDIDUS. Shell white, with rows of spines, and very short beak. The shell is about two inches long, and some of the spines are black.

FASCIATUS. The shell of this species is inflated, with rows of spines, white barred with brown; the spire has four distinct turgid whorls.

B. *Sutures expanding into crisped foliations; the beak is abbreviated.*—PURPURA; that is, the species of this division constitute the tribe of purple-fish properly so called.

##### Species.

RAMOSUS. Shell with a triple row of foliations and contiguous spire; beak truncate. The shell is transversely striate, varying very much in shape, colour, and appearance of the foliations.

FOLIATUS. Shell with a triple row of foliations; aperture



ture one-toothed. It is found on the eastern shores of North America.

**SCORPIO.** Shell with four rows of foliations; spire capitate; beak truncate. Inhabits the southern districts of Asia; is extremely rare and valuable. The shell is white, brown, or black; aperture orbicular; one of the whorls turgid, and larger than the rest.

**SAXATILIS.** Shell with five rows of foliations and contiguous spire; beak abbreviated. Found in the Mediterranean, and on some of the coasts of Asia.

**DIAPHANUS.** Shell white, diaphanous, with six rows of foliations; foliations are tipped with black.

**CICHOUREUM.** Shell ochraceous, transversely striate, with numerous rows of foliations, but the foliations are neither very prominent nor crisped.

**VERSICOLOR.** Shell varied with white and red, with flat acute foliations, pointed with black.

\* **ERINACEUS.** Shell sub-angular; the whorls crowned with tubular and sub-spinous raised scales or points; beak short and covered. It inhabits the European seas, and is about two inches long. The shell is extremely rugged, surrounded with tubular ribs, each rib ending with its mouth on the angle; aperture extremely oval, spire pointed, with six whorls; the lip is broad and crenate.

**STRIATUS.** Shell with seven rows of foliations; white with elevated transverse brown striae. It inhabits India, and has a spire with seven whorls.

**TRIPTERUS.** Shell elongated, triangular, with membranaceous foliations at the angles; it is found in Campania; the shell is snowy, transversely wrinkled; the wrinkles are crossed with longitudinal striae; aperture oblong ovate, granulate; the spire has seven whorls, granulate between the sutures.

**SACELLUM.** Shell umbilicate, with muricate ribs; the whorls flattened above, with acute margins; lip crenate; beak straight ascending; it inhabits Nicobar.

**MOTACILLA.** Shell triangular, knotty, transversely grounded, a triple row of tubercles; the beak is long, subulate, straight; mouth white. Found in India.

**TRIQUETER.** Shell long, subulate, triangular, with reticulate ribs, and a straight closed beak. The shell is white spotted with red; the aperture is elliptic; the lip crenate; spire pyramidal, with six whorls.

*C. With three protuberant rounded sutures; chiefly of the Eastern or Pacific seas; some of the species are mere fossils.*

#### Species.

**LYRATUS.** Shell with protuberances crossed by smooth belts; aperture ovate. It is found in George's bay.

**RANA.** Shell rough, with opposite impressed protuberances, and a muricate belt or two; aperture commonly toothless and ovate. Found on the Asiatic shores; the shell is white, grey, or brown, with elevated transverse striae, which are sometimes granulate.

**GYRINUS.** Shell with opposite continued protuberances, and barred with tuberculate dots; aperture orbicular. Found in the Mediterranean and Atlantic; also on the shores of America and India. The shell is small, white or brown, with alternately less bands of elevated dots.

**AFFINIS.** Shell turgid, with opposite continued protuberances; spire pointed; the whorls surrounded with a crown of tubercles, the outmost glabrous. First whorl of the spire with a triple or quadruple crown of round tubercles.

**LAMPAS.** The shell of this species has nearly opposite protuberances, gibbous, the protuberances longitudinally

tuberculate. It inhabits India, and is from 4 to 14 inches long. The shell is of a red or chestnut colour, and rough with minute tubercles; aperture oval, toothed on each side, whitish flesh-colour, with an orange oval coloured border within.

**OLEARIUM.** Shell with alternate protuberances, and numerous tubercles; back unarmed behind and striate; the aperture is toothless. It inhabits the Mediterranean and African seas.

**FEMORALE.** Shell with decussate protuberances, triangular, wrinkled, and knotty on the fore-part; aperture ovate, toothless. Inhabits Asia, Guinea, and America; it is from five to seven inches long. The shell is brown, with transverse ribs which are white towards the aperture, with intermediate grooves transversely striate; beak turned inwards.

**CUTACEUS.** Shell with a single protuberance, angular, and a little wrinkled with knots; aperture toothed; pillar perforated. It inhabits Barbary, Guinea, and South America; is three inches long; shell brownish, with a tinge of bloom or white, with perpendicular undulate lines.

**LOTORIUM.** Shell with decussate protuberances, angular, with longitudinal tuberculous knots; beak flexuous; aperture toothed. It inhabits the Mediterranean.

**PILEARE.** Shell with decussate protuberances, and a little wrinkled with knots; aperture toothed; beak sub-ascending. Found in the Mediterranean.

**BUPONIUS.** Shell with six opposite, continued, vaulted protuberances and knotty belts; beak oblique.

**PYRUM.** Shell varicose, ovate, transversely grooved, and knotty, with a long flexuous subulate beak. It inhabits the Indian ocean, in numerous varieties; the shell is white, sometimes varied with brown, or chestnut, or yellowish-brown; angular, longitudinally striate, and transversely grooved; aperture oval, toothed; pillar sometimes toothed, sometimes toothless.

**CAUDATUS.** Shell thin, transversely striate, brown varied with white; beak subulate; spire a little prominent, and tipped with brown, the whorls grooved, the first gibbous.

**RUBECULA.** Shell with decussate protuberances, obtuse with knotty wrinkles; belly equal; aperture toothed. Inhabits Africa, India, and South America; it is very rare. The shell is red or yellow, and barred.

**SCROBICULATOR.** Shell with nearly opposite, hollowed protuberances; smooth; aperture toothed. It inhabits the Mediterranean.

**RETICULARIS.** Shell with nearly opposite protuberances, reticulate, with tuberculate spots; pillar almost toothless, beak ascending. Inhabits the Mediterranean and America; is six inches long. Shell transversely ribbed, and longitudinally striate, with party-coloured knots in the angles of the section; aperture with a red border; lip toothed.

**LAMELLOSUS.** Shell with membranaceous protuberances continued through the spire, and terminated with a spine. It inhabits the Falkland islands.

**NODATUS.** Whorls knotty; beak straight; aperture violet; lip toothed. It inhabits New Holland.

**ANUS.** Shell with a dilated membranaceous protuberance and lips, gibbous and reticulate, with tubercles; aperture sinuous; the beak is erect. Inhabits the Mediterranean and Asia; is three inches long, and the shell is generally brown, with white bands and sub-triangular aperture.

**MILIARIS.** Shell varicose, with tuberculate belts; aperture a little toothed; beak elongated; whorls ventricose; the shell is of a cinereous greenish colour; the tubercles sometimes black, rarely rufous.



**SENEGALENSIS.** Shell transverse striate, with spinous protuberances, the spines decreasing towards the head. This species inhabits Senegal; is about  $2\frac{1}{2}$  inches long; the shell with nine tubercles, alternately lefts; each of them armed with eight spines; the spire with eight whorls.

\* **CARINATUS.** Shell ventricose, with five or six whorls forming angular ridges; aperture semi-circular; beak a little reflected. It inhabits Europe.

**D.** *More or less spinous, and without manifest beak.*

#### Species.

**RICINUS.** Shell obovate, with subulate spines; aperture and lip toothed. Inhabits the Asiatic ocean, is about  $1\frac{1}{2}$  inch long. The spines are disposed in rows; the spire prominent; mouth violet colour.

**NOVUS.** Shell obovate with conic spines; lip toothed; pillar smooth and coloured; shell is lefts than that of the Ricinus; the aperture is of a flesh colour.

**NERITOIDEUS.** Shell with numerous rows of knots; lip with pointed angles; pillar flattish. It inhabits India, and resembles a Nerita. The shell is sometimes white with black tubercles and violet mouth, or yellowish-brown with brown tubercles and yellow aperture; first whorl with four rows of tubercles on the back; lip armed with three or four spines; pillar with from two to four teeth.

**FUCUS.** Shell coarse ventricose, striate transversely, with four rows of knots; pillar impressed, and with the outmost whorls flattish. This is a rare shell; the pillar is marked with two or three black dots.

**LOCO.** Shell obovate and knotty on the fore-part; aperture toothless and sub-orbicular. It inhabits the Chinese shores; shell four or five inches long; the inhabitant is eaten by the natives, and contains a purple juice in the vesicle on the neck.

**HYSTRIX.** Shell sub-ovate, with acute spines; aperture toothless, repand. The shell is sometimes of a bay colour, varied with white or yellowish-brown, with or without spots; the spines are in four rows; the aperture wide.

**MANCINELLA.** Shell ovate, with obsolete spines; aperture toothless; pillar transversely striate.

**HIPPOCASTUM.** Shell ovate striate, with from three to five rows of obtuse spines or tubercles, aperture transversely striate. Inhabits Guinea, India, and the islands of the Indian ocean. The shell is transversely striate on the back, and armed with rows of obtuse spines or tubercles varying in numbers; whorls of the spire distant.

**SENTICOSUS.** Shell a little tapering, longitudinally ribbed, and transversely cancellate; aperture striate. Found in the Indian ocean; about two inches long; the shell is yellowish, with a brown band on each of the whorls, the ribs prickly; aperture oblong; pillar with a single plait; spire pointed with distant whorls.

**MELONGERA.** Shell obovate glaucous, with a sub-spinous whorl rather prominent spire, and smooth aperture. Found in India and America in great varieties; the specimens are generally about  $5\frac{1}{2}$  inches long. The shell is generally brown, barred with white; aperture oval, large; spire with knotty whorls, rarely smooth; the first very large and turgid, and mostly surrounded with spines.

**CONSUL.** Shell thick, ventricose, white, transversely grooved and knotty; aperture repand, ovate; lip sinuous, plaited inwardly, and denticulate. It inhabits India.

**LIMA.** Shell brown, sub-ovate, and slightly beaked, with crowded nodulous paler belts. Found in George's bay.

**E.** *With a long straight subulate closed beak, and unarmed with spines.*

#### Species.

**CURIOSUS.** Shell without beak, slightly plaited, ovate, pointed; tip carious. Found in the aqueduct at Seville; size of a bean; the shell is oblong, pointed cinereous, sub-diaphanous, longitudinally grooved, and emarginate at the base.

**BABYLONIUS.** Shell tapering, with acute spotted belts, and straight tail; upper lip cleft. It inhabits India and the American islands; is about four inches long, and the shell is surrounded with white belts, and marked with square brown or black spots.

**JAVANUS.** Shell tapering, with immaculate knotty belts; the lip has a separate scoop. It inhabits India; resembles the Babylonius, but is white, immaculate, and sometimes varied with yellowish-brown rays; beak longer or shorter; whorls carinate or tuberculate, and sub-striate.

**SINENSIS.** Shell ventricose, pointed, with a cancellate reflected beak; aperture oval; whorls with transverse granulate striæ; base crowned with spines. It inhabits Senegal; the shell is spotted, and has a single plait on the pillar.

**STRAMINEUS.** Spire with elevated wings, the interstices filled with short straw-like projections; all the whorls crowned with tubercles at the base; aperture violet; lip undulate, and with the pillar snowy. Inhabits the southern ocean. Shell straw-colour; it is three inches long.

**AUSTRALIS.** Shell ovate; longitudinally striate; lip undulate; whorls caniculate; the first turgid and four-plaited; the next three-plaited. It is found in the South sea, and is  $2\frac{1}{2}$  inches long. The shell is of a straw-colour, with a yellow pillar and snowy lip.

**UNCINATUS.** Spire pointed, and transversely striate; the four first whorls with a callus, armed with hooks in the middle, the fifth and sixth ribbed; the rest glabrous. The shell is not above an inch long; the aperture is oval; lip toothed; spire with nine whorls.

**TURRIS.** Shell tapering, the whorls crowned with tubercles, and surrounded with a granulate belt, the first very finely striate transversely. The shell is white, with a reddish band; this also bears a strong resemblance to the Babylonius, but the lip is entire.

**COSTATUS.** Beak a little reflected, and obliquely striate; the three first whorls of the spire ribbed; the other four cancellate, the first obconic; the pillar has a single plait. It is found in a fossil state in Campania; the ribs of the first whorls terminating in spines above.

**ASPER.** The shell of this is longitudinally plaited, and transversely ribbed; the spire is a little prominent; the aperture ovate; lip crenulate.

**COLUS.** Shell tapering, striate, knotty, carinate, with a long straight beak; lip crenulate. Found in the Indian ocean. The shell is white, transversely striate, round, or angular; whorls separated by a groove, and crowned with knots; the upper ones brown; the beak is nearly three inches long, and beneath it is brownish.

**MORIO.** Beak dilated; shell black, with a white band; whorls a little knotty; pillar wrinkled. Found in divers parts of Africa, and is about six inches long; the shell is brown or cinereous, and transversely striate.

**COCHLIDIUM.** Beak dilated; whorls of the spire flat above. It inhabits the Indian ocean.

**SPIRILLUS.** Shell with a long beak; spire mucronate; the whorls convex above. Inhabits Tranquebar; resembles the Caniculus, (below,) but the whorls are not separated by a groove; shell ventricose beneath; convex above; spire with a prominent obtuse knob in the centre, the whorls surrounded with an acute margin above; the beak is sub-

cylindrical.



cylindrical, and not dilated towards the aperture of the belly; pillar with a transverse wrinkle.

**CANICULATUS.** Beak dilated; whorls of the spire separated by a small canal. It inhabits Canada and the Frozen sea; the shell is brown, sometimes larger and uniform, sometimes less and radiate, smooth or transversely striate; margin of the back knotty.

**FIGUS.** Beak dilated; shell striate, the whorls separated by a small canal; the outer ones brown, the first crowned with knobs at the base.

**CARICA.** Beak dilated; shell transversely striate; spire a little prominent; the whorls crowned with spines at the base. It is about eight inches long; the pillar is plaited.

**RAPA.** The shell of this species is solid umbilicate, with a triple row of knots, and transversely striate; the aperture large and striate. It inhabits India, and resembles the Bulla rapa.

**NIVEUS.** Beak dilated; shell snowy diaphanous; whorls of the spire separated by a small groove; the first with transverse carinate ribs. It inhabits the seas about Brazil.

**GRANUM.** Shell hemispherical, glabrous, diaphanous, with a spreading straight beak, crown capillary. Found in North America. The whorls are convex, and growing gradually less towards the tip.

**ARUANUS.** Beak dilated, spire crowned with spines. It inhabits New Guinea; shell coarse ponderous, black or blueish, furrowed with rings; aperture angular; beak rather long; spire mucronate.

**PERVERSUS.** Beak dilated and repand; spire turned the contrary way, and slightly crowned. It inhabits the American ocean; this species is exceedingly rare; the spines are somewhat pointed, sometimes more obtuse.

\* **ANTIQUUS.** Beak dilated; shell oblong, with eight round whorls; the first ventricose. It inhabits the European and Frozen seas, and is from four to six inches long. The shell is dark and of a dirty yellow, very finely striate, transversely or longitudinally plaited; whorls of the spire separated by a groove, the middle one sometimes crowned with tubercles, rarely turned contrary.

**DESPECTUS.** Beak dilated; shell oblong striate, and somewhat rugged; it has eight whorls, with two elevated lines. It inhabits the European seas, and is about five inches long. The shell is coarse white, with a glossy orange-yellow aperture; the animal is sometimes eaten, but is more frequently used as a bait for cod and ray-fish.

**FORNICATUS.** Beak dilated; shell ovate oblong; the whorls ventricose, longitudinally striate, and a little angular. It inhabits the Greenland seas. The shell is more than three inches long, sub-diaphanous, smoothish and yellow, within white glabrous; there are seven whorls; with wide transverse striae.

**INCRASSATUS.** Shell oblong, transversely wrinkled, and longitudinally striate; lip denticulate within, and thickened without.

\* **TRUNCATUS.** Shell oblong, longitudinally ribbed; beak a little reflected, emarginate, truncate. This is the Murex costatus of Pennant. It inhabits European coasts, is very minute, with six whorls.

\* **ACUMINATUS.** Shell narrow, oblong, ribbed, with a pointed spire. It inhabits England.

**ARGUS.** Shell gibbous, with transverse tuberculate ribs; brown, with darker bands, within white; aperture ovate. It is found in India, and in the Friendly and Society islands.

**MACULOSUS.** Shell cancellate, yellow, with alternate white bands and chestnut patches; spire with eleven round whorls.

**MAGELLANICUS.** Shell ventricose, umbilicate, transversely striate, cinereous within violet; whorls of the spire with parallel ribs, the first very large.

**CANCELLATUS.** Shell ovate, solid, opaque, cinereous; whorls of the spire cancellate, and separated by a groove.

**SCOLOPACEUS.** Shell brown; whorls surrounded with grooves, and with tubercles above; tip of the tubercles and aperture white. There is a variety which is more elongated, and of a dirty yellow; with an obsolete band on the whorls, the tubercles more globular.

**LITTERATUS.** Shell ventricose, tapering, spotted with black; pillar with a single plait; beak short; shell snowy, with a wide aperture; spire with eight prickly whorls.

**TRIGONUS.** Shell sub-triangular, cancellate; spire with inflated contiguous whorls, the first with a large distinct tubercle. It is found in Senegal. The shell is two inches long; spire with seven whorls.

**SEMILUNARIS.** Shell longitudinally ribbed, and very finely striate transversely; spire with flattish distant whorls, with rows of tubercles; aperture semilunar. This is found in Senegal; the shell is about an inch long, the whorls with a single row of tubercles, the second with a double or triple row; the first with six or seven rows.

**COSTATUS.** Shell with annular striae, and inflated round whorls, each of them with nine rounded, parallel, spinous ribs. Inhabits Senegal. The shell is about  $2\frac{1}{2}$  inches long.

**SULCATUS.** Shell rounded, with annular grooves; aperture oval; first whorl of the spire turgid. Found in Senegal; shell  $1\frac{3}{4}$  inch long, with nine contiguous whorls, which are sometimes inflated, sometimes flattish.

**FUSIFORMIS.** Shell elongated, with numerous rows of very minute crowded tubercles. This also inhabits Senegal; the shell is six lines long, with about eight whorls; the first with from twelve to fifteen rows of tubercles, the second with five.

**TRITONIS.** Shell ventricose, oblong, smooth, with rounded whorls to the aperture, and short beak. Inhabits India and the South seas; there is a variety found in the Mediterranean; the shell is full sixteen inches long, white, and appearing as if covered with brown, yellow and black scales; the pillar is white, with transverse black striae; whorls of the spire separated by a nodulous suture, the first marked with striate grooves. This species is used by the natives of New Zealand as a musical shell, and by the Africans, and many nations of the East, as a military horn.

**TULIPA.** Shell ventricose, oblong, smooth; whorls rounded, with a double suture; pillar with two plaits; beak dilated, striate. It inhabits South America; the shell generally spotted and clouded, within transversely striate; whorls with rarely a single suture.

**CLATHRATUS.** Shell oblong, beaked and grooved, with longitudinal sub-membranaceous plaits. This species is found in Iceland; it resembles very much the Turbo clathratus, to be described hereafter, but it has a short beak, and numerous erect compressed plaits.

**NASSO.** Shell solid, black or pale brown, with a white sub-diaphanous band; whorls knotty; pillar a little plaited. This is thought to be a species between the Voluta and Murex.

**PLICATUS.** Whorls of the spire plaited and knotty. It is found, though rarely, in India.

**SCALA.** Shell umbilicate, with distant wedged, ribbed, and transversely striate whorls; aperture heart-shaped; the shell is reddish-white, sometimes yellow, with pale brown bands.

FUSCELLUM.



## MUREX.

**FISCELLUM.** Shell angular, longitudinally plaited, and transversely striate; lip toothed; mouth violet; beak straight, short. Inhabits China.

**CORONA.** Shell fastigate, with brown and yellowish bands; whorls above flattish, with waved imbricate scales; beak straight, entire. It inhabits Mexico.

**DOLARIUM.** Beak dilated, shell ovate, with a few elevated obtuse belts on the whorls. This, which is about the size of a walnut, inhabits the ocean; shell horny, tapering both ways, surrounded with numerous obtuse, and very much raised belts, two on the whorl; pillar perforated; aperture ovate, a little transverse forwards, excavated at the outer margin, and tapering behind into a hardly manifest and slightly emarginate canal.

**CORNEUS.** Shell oblong, slender, white, the margins of the whorls complicated, the tip tubercular; aperture toothless; beak a little ascending. It inhabits the British and North seas; three inches long. The shell is white, covered with a brown skin, transversely striate; spire with eight round whorls.

**LIGNARIUS.** Shell oblong, coarse, with obtusely knotty whorls; aperture toothless; beak short, straightish. Found in divers parts of the ocean; about three or four inches long. Shell smooth, coarse, with a single row of knots on the whorls.

**TRAPESIUM.** Shell oblong, obtusely angular, with slightly knotty whorls; aperture toothed; beak short and straight. It inhabits the Indian ocean; it is frequently seen above six inches long.

**VESPERTILIO.** Shell solid, ventricose, smooth, with an oblong oval aperture; beak and crowned spire striate; the outer whorls caniculate. It is found in the Indian ocean, and is full four inches long. The shell on the outside is of a chestnut colour, but within it is of a flesh colour.

**SCOLYMUS.** Shell thin, diaphanous, ventricose, and transversely striate, the middle of the back smooth; spire with obtuse undulate knots; pillar three-plaited; the shell is white, with nine or ten whorls on the spire; the tubercles are hollow within, and the beak is annulate.

**HARPA.** Shell is ventricose, longitudinally ribbed, the ribs transversely striate; spire a little prominent, the whorls distant.

**TUBA.** Shell fusiform, transversely striate, white, with a brown tip to the spire; whorls distant, and crowned at the base with knots. It is found in China, and is nearly six inches long. Beak is rather long; the spire has eight whorls.

**SYRACUSANUS.** Shell oblong, with striate plaited whorls, covered with tuberculate ridges; aperture toothless; beak short. It inhabits the Mediterranean, but is extremely rare. The whorls are testaceous, with white divisions; beak moderately long, obliquely striate outwardly.

**CRATICULATUS.** Shell oblong, with rounded, plaited, and transversely reticulated whorls; aperture toothed, beak short. It inhabits the Mediterranean. Shell whitish, slightly plaited longitudinally, with elevated ferruginous angles; whorls with elevated striæ; aperture striate within.

**SCRIPTUS.** Shell nearly without beak, fusiform, smooth, pale, with longitudinal brown striæ; lip toothed. It inhabits the Mediterranean, and is not much larger than a grain of barley. The shell is oblong, with subpiceous flexuous striæ.

**TERNATANUS.** Shell transversely striate, with distant, undulate tuberculate whorls; aperture oblong; beak straight, longish. It inhabits the Ternate island; is yellow, and about four inches long.

**INFUNDIBULUM.** Shell umbilicate, undulately knotty, with elevated brown striæ; perforation funnel-shaped; pillar two-plaited. This is a very rare shell, about four inches long, with nine whorls.

**POLYGONUS.** Shell a little ventricose, undulate, with tubercles; striate, grooved, and obtusely angled; black, with an oval aperture and short beak. It inhabits the Indian ocean; shell is sometimes umbilicate, sometimes not; pillar with or without plaits.

**ISLANDICUS.** Shell transversely striate, snowy, covered with a brown skin; spire papillous at the tip, with round whorls, the first very large and ventricose. It is found in Iceland. The shell is about five inches long, with from six to nine whorls; the aperture is oblong; the beak short, lip acute; pillar smooth.

**LEVIGATUS.** Shell fusiform; spire transversely striate, with distant flattish whorls, the first round and smooth; the beak rather long. It has been found in the fossil state in Campania, and is  $3\frac{1}{4}$  inches long. The aperture is oval, and the beak sometimes a little bent.

**FOSSILIS,** so called on account of its being found in Campania, only in the fossil state; shell fusiform, thin, cancellate, with a long beak. It is an inch and a quarter long; the whorls are more or less distant; pillar plaited or smooth.

**CANDIDUS.** Shell snowy, transversely striate; spire with distant whorls, carinate in the middle, and crowned with tubercles; aperture oval; lip grooved within, and denticulate at the margin. The shell is between nine and ten inches long.

**ANSATUS.** Shell brown, transversely striate; spire mucronate, the whorls distant, convex and knotty at the base; beak long.

**UNDATUS.** Shell solid, ventricose, with waved angles, and very finely striate transversely; spire mucronate, the whorls knotty at the base; lip denticulate. It inhabits India; is eight inches and a half long, and ponderous; shell white, with fourteen whorls, and a slightly incurved beak.

**LONGISSIMUS.** Shell thin, striate, with an obtuse knotty spire and long straight beak. It inhabits India; is nine inches long; shell white with ten whorls.

**LANCEA.** Shell narrowed; whorls of the spire transversely ribbed and longitudinally crenate; aperture ovate, ribbed with white within, and toothed at the margin; the pillar is two-plaited. It inhabits Amboina; shell exceedingly thin and narrow, the younger ones reddish, the adult ones white, interstices of the ribs and aperture violet; the spire has eleven or twelve whorls.

**ANGUSTUS.** Shell narrowed; first whorl of the spire longitudinally plaited and transversely ribbed, the others smooth and round; beak transversely ribbed.

**VERSCOLOR.** Shell subcylindrical with an obtuse spire, the whorls round and striate, the lower ones mostly glabrous. It inhabits India; shell brown variegated, with nine whorls.

**VERRUCOSUS.** Shell umbilicate, and surrounded with belts, the middle ones more raised; whorls crowned with tubercles which are spotted with brown; beak inflected. Inhabits the Red sea.

**STRIATULUS.** Shell thin, transversely striate; spire mucronate; the whorls round; beak long; aperture ovate; lip crenulate. This shell is about four inches long, covered with a brown skin.

**PARDALUS.** Shell rounded, white with violet spots, longitudinally ribbed and transversely striate; spire obtuse; beak long.



**GIGAS.** In this species the whorls of the spire are tumid, gibbous, nodulous, and annulate; beak reflected; lip denticulate beneath. This shell is twenty-one inches long.

**LIGNOSUS.** Shell whitish; spire obtuse, the whorls slightly crowned with unequal tubercles; beak transversely striate. It is about one inch and a half in length.

**GIBBULUS.** Shell tapering, orange; spire obtuse, the whorls distant, with longitudinal ribs and flexuous transverse striæ; the beak is short.

**GRANULARIS.** Shell tapering, spire with contiguous whorls separated by a flexuous line, the first ventricose. Found in the Adriatic.

**VEXILLUM.** Shell tapering, transversely ribbed; whorls convex; aperture oval; lip denticulate; beak short. The shell is of an orange colour with brown belts.

**VULPINUS.** Shell oblong, ventricose; the whorls with a striate margin; aperture glabrous; beak short and bent outwards. The shell of this species is middle-sized, tawny, with eight whorls.

**AFER.** Shell ovate, transversely striate; spire with flatish whorls crowned with a row of tubercles. The shell is one inch and a half long, fulvous or white varied with brown; it has nine whorls.

**CAMPANICUS.** Shell ventricose; spire obtuse, cancellate, with carinate whorls, the first ventricose and smooth; beak long and smooth. It is found fossil in Campania, and is three inches long.

**ARENOSUS.** Whorls of the spire with decussate ribs; the first very large, the three outmost smooth; beak acute; aperture oval; lip toothed outwardly. It inhabits the sandy shores of India; very small.

**MARCENSIS.** Shell narrow, brownish, transversely striate; spire mucronate, with distant, contrary, round, longitudinally ribbed whorls; beak prominent; aperture oval.

**LINEATUS.** Shell oblong, whitish with transverse striæ; beak short, straight. Found on the shores of New Zealand.

**PERRON.** Shell a little tapering; the whorls carinate above, margined and flattened; beak long, straight. It inhabits the Southern ocean.

**LARVA.** Shell cylindrical; spire with a crenate callous belt, the upper whorls with plaited knots; lower ones flatish; beak straight, short, emarginate.

**NERITOIDEUS.** Shell solid, thick, coarse; spire exerted; the whorls transversely striate; aperture semiorbicular, and striate; beak straight and short.

**PRISMATICUS.** Shell ovate angular, iridescent, longitudinally grooved and plaited; beak short; lip denticulate. It inhabits India and the South seas.

**COLUMBARIUM.** Shell with longitudinal plaited ribs, and transversely grooved, angular, spinous, carinate, alternately varied with white and brown; whorls lessening suddenly; beak short, straight; mouth violet. It inhabits Pulo Condore.

**ASPERRIMUS.** Shell ribbed, varied with brown, yellow, and white; whorls oblique, with a tuberculate margin, and brown band in the middle, and another white one; beak dilated, ascending; shell nearly two inches long.

**UNDULATUS.** Shell white, undulate with bay, with grooves marked with raised striæ; the whorls, at the margin, nodulous; beak straight. Found in the Red sea, and is about four inches long.

**F.** *Tapering, subulate, with a very short beak.*

**VERTAGUS.** Whorls of the spire plaited above; beak ascending; pillar plaited within; it inhabits India, is about three inches long, with fifteen or more round whorls separated by a groove; the lower ones smooth on one part; beak very short.

rated by a groove; the lower ones smooth on one part; beak very short.

**ALUCO.** Whorls of the spire tuberculate with a spinous streak in the middle; pillar with a single plait, beak ascending. It is found in the Southern and Atlantic oceans, also in the Red sea; and is about four inches long; whorls generally whitish, sprinkled with blueish or brownish dots; whorls transversely striate; lip round; aperture oval.

**ANNULARIS.** Whorls surrounded with longitudinally striate belts, the first whorl transversely striate; beak ascending.

**PLICATULUS.** Shell ventricose, with a transversely striate spire, the whorls with longitudinally knotty plaits; aperture oval. The shell is yellowish, with white plaits; spire with eight whorls; pillar with a single wrinkle.

**SORDIDUS.** Shell ventricose, transversely striate, and crowned with black knots; lip dilated. The shell is generally blueish, with a very trifling prominent beak; this is thought by some to be a variety of the *Strombus tuberculatus*.

**CINGULATUS.** Spire transversely striate and grooved; the whorls surrounded with three rows of granulations, the first a little knotty. It is found in Tranquebar.

**FUSCUS.** The shell of this species is rounded; first whorl of the spire is gibbous; the following ones varicose; the last with numerous spines.

**FASCIATUS.** Shell transversely striate; the spire crowned. This is found in the rivers of America.

**FLUVIATILIS.** Shell brown; first whorls of the spire crowned with spines, the other with knots; aperture expand.

**ALATUS.** Shell reticulate; spire mucronate, the first whorl grooved and transversely striate; lip winged; spire annulate, with nine whorls surrounded with a striate band.

**NODULOSUS.** Shell transversely striate, and alternately barred with brown and white; spire mucronate, the whorls distant with undulate knots. Shell with a slightly prominent lip.

**TEREBELLA.** Shell with a triple moniliform belt on each side the whorls; aperture oval, with curved striæ within. The shell is from an inch to two inches and a half long; in colour it is a sort of chestnut brown; sometimes uniform, or chestnut with white belts, or white with chestnut coloured belts; aperture often varied with blue and white.

**FUSCATUS.** Spire with crenulate whorls, the upper striæ denticulate. It inhabits the Mediterranean; the shell is covered with a brown skin, the base obtuse; whorls with a knotty belt in the middle, and a band on each side, one of them granulate, the other crenulate.

**TOROLUSUS.** Whorls of the spire with a slightly knotty zone above; beak short. In colour it is white, smooth, or marked with obsolete longitudinal striæ; the tip plaited; zone of the whorls elevated, gibbous, obtuse.

**REDULA.** Whorls of the spire tuberculate, with a double row of punctured striæ. It inhabits Africa; shell reddish or brown; tubercles often tipped with white; the aperture is oval.

**ASPER.** Whorls of the spire grooved, transversely striate and muricate; beak ascending; it inhabits Guinea; the shell is of a milk-white, with rows of brown dots; solid, with from twelve to fourteen longitudinal grooves; aperture sub-oval; pillar with a single plait.

**GRANULATUS.** Shell rough with decussate tubercles; beak acute, ascending; it is found in India; the shell is about two inches long, white; the whorls are longitudinally ribbed and transversely striate; aperture oval; pillar with a single plait.



**DECOLLATUS.** Whorls of the spire with longitudinal plaited grooves, the tip appearing as if the point of it were broken off. It inhabits the European seas; resembles the *Helix decollatus*, but is emarginate at the base; aperture obovate; upper margin of the whorls tapering with longitudinal striæ and imbricate plaits; the grooves are opaque black.

**MOLUCCANUS.** Shell striate; whorls of the spire transversely grooved with undulate longitudinal plaits; lip dilate crenulate, beak tubular. It is found among the marshes of the Molucca islands.

**MINIMUS.** Shell with transverse undulate striæ, crossed by longitudinal lines; aperture orbicular. Found in Jamaica.

**STRIGILATUS.** Shell longitudinally striate; whorls undivided, with a snowy belt at the suture spotted with rufous.

**TUBERCULATUS.** Shell transversely striate and furrowed with glabrous knots; lip thickened. The shell of this species is solid, a little gibbous, obtuse; the knots black tipped with white.

**GIBBOSUS.** Whorls of the spire margined; belly gibbous; lip cleft denticulate; beak short. Spire with nine striate whorls, and longitudinally plaited; beak straight and short; shell with reddish spots.

**ATRATUS.** Shell black, the whorls transversely striate and tuberculate; pillar with a single plait; beak straight. The spire has ten whorls; lip crenulate.

**CONTRARIUS.** Shell with four contrary whorls marked with double striæ, beak dilated. It inhabits the European and North seas.

**EBURNEUS.** Shell contrary, hyaline, with six very fine crenulate whorls.

**CONDITUS.** Shell tapering, very rough, with granulations; lip doubled, emarginate each side, and toothed within; aperture oval, striate.

**CLAVA.** Shell transversely striate and spotted; whorls with plaited knots; beak ascending; lip doubled, dilated, pillar-lip replicated and glabrous. It inhabits Pulo Condore.

**HEXAGONUS.** Shell yellowish, hexagonal, with transverse granulate striæ; first whorl tuberculate; aperture roundish; lip dilated. It is found in the South sea, and specimens of it are frequently seen fossil.

**MINUTISSIMUS.** Shell with five spirally striate whorls and remote ribs; beak closed. It inhabits the Welsh coasts; the shell agreeing with its name is exceedingly minute, elegant, and pellucid.

**MUREX Mutiani**, in *Conchology*, a name given by some authors to the genus of shells, known at this time under the name of *porcelains* and *conchæ venereæ*. See **PORCELAIN-shell**.

**MUREX**, among the ancient Romans, a caltrap, or iron instrument, with sharp points every way, used as a defence against the enemy's horse.

**MURFA**, in *Geography*, a town of Hindoostan, in Bundelcund; 15 miles E.N.E. of Callinger.

**MURFRESBOROUGH**, a post-town of America, in North Carolina, and capital of Gates' county; situated on Meherrin river, and containing a few houses, a court-house, gaol, and tobacco warehouse, and carrying on a small trade with Edenton, and the other sea-port towns; three miles from Princetown.

**MURG**, a river of Germany, which rises about two miles S.S.E. of Oppenan, runs S.S.E. about six miles to lake Elp, near which it is joined by the Lorbech, when it runs northward to Gerspach; and having passed this town

it runs N.W. by Kapperheim, Raftadt, &c. into the Rhine.

**MURGA**, **MORGA**, a river on the coast of Chili, in South America, S. of the south point of Quintero bay, and not far from the entrance into Chili river.

**MURGAH**, a town of Hindoostan, in Gurry Mundella; 25 miles E. of Mundella.

**MURGAW**, a town of Hindoostan, in the circle of Gohud; 10 miles S. of Calpy.

**MURGENTHAL**, a town of Switzerland, in the canton of Berne; 15 miles E. of Soleure.

**MURGIAN**, a town of Persia, in the province of Comis; 30 miles E. of Damegan.—Also, a town of Persia, in the province of Kerman; 50 miles N. of Sirgian.

**MURGLOOR**, a town of Hindoostan, in Golconda; 25 miles S.S.E. of Combamet.

**MURHARD**, a town of Wurtemberg, on the Muhr; 22 miles N.E. of Stuttgart. N. lat. 48° 56'. E. long. 9° 39'.

**MURIALTO**, a town of France, in the department of the Stura, on the Bormida; five miles E. of Ceva.

**MURIATE of Iron**, in *Agriculture*, a salt which seldom occurs in nature. It has been supposed highly inimical to vegetation. It is decomposed by fixed alkalies, lime, and magnesia, forming digestive salt, sea-salt, muriate of lime, and muriate of magnesia.

**MURIATE of Lime**, an earthy salt which consists of the muriatic acid and lime. It is found native in the sea-water, and in the mother-water of culinary salt. It is likewise obtained either by direct combination, or by the decomposition of sal ammoniac by quick lime. Lord Dundonald says, that it "is very soluble, and, when mixed with dung, its effects in promoting vegetation will probably be found similar to those of the muriate of magnesia. It is decomposed by fixed alkalies, forming therewith muriate of pot-ash, or digestive salt of Sylvius, and muriate of soda."

**MURIATE of Magnesia**, an earthy salt which consists of the muriatic acid and pure magnesia. It is found in the mother-earth of nitre manufactories, and may be produced artificially both by direct and indirect combination. According to lord Dundonald, it is found in great abundance in sea-water, constituting upwards of one-fourth of the saline matter it contains. It may be procured in great quantities from the bitter refuse liquor which at present runs to waste at the salt-works. It is a salt very deliquescent, and of difficult crystallization; its acid is capable, in a great measure, of being expelled by heat, and very considerable benefit has been experienced from its use in promoting vegetation, when mixed with dung or compost dung-hills. It seems to possess, when applied in moderate quantities, the septic powers of sea-salt, and thus to promote the complete putrefaction of dung. It is decomposed by fixed alkalies and lime, forming therewith digestive salt of Sylvius, sea-salt, and muriate of lime. With ammoniac, or volatile alkali, it forms a triplicate salt of easy crystallization.

**MURIATE of Soda**, a neutral saline substance, consisting of a muriatic acid and soda, or the fixed mineral alkali. It has received various denominations, according to the state in which it is found in nature, as rock-salt, which is dug out of the earth in solid masses, bay-salt, formed by the evaporation of sea-water, and river-salt obtained from salt springs. But none of these salts is pure, they are always mixed with some heterogeneous parts; thus rock-salt contains gypsum, bay-salt, a great deal of muriate of magnesia, and river-salt, frequently both. Sometimes they contain by accident bitter salt,



# MURIATIC ACID.

salt, alum, ammoniacal salt, &c. It may probably be useful as a manure. See SEA-SALT.

**MURIATIC ACID**, in *Chemistry*, a substance which, although it has not as yet been decomposed, is presumed to be a compound of some inflammable body with oxygen, and, in consequence, has been classed with the other acidulous oxyds. Our ignorance of its constituents does not admit of its procuration by synthesis. It is, however, found in great abundance in nature, being a component part of muriate of soda (common salt), and some others. It is obtained by the following process:

Let equal parts, by weight, of sulphuric acid and muriate of soda, be put into a glass retort, or common gas bottle. Let the beak of the retort be placed in a mercurial trough, below the surface, under a jar filled with mercury. An elastic fluid will be disengaged, which will ascend into the jar, displacing as much of the mercury. If a small lamp be now applied to the retort, the gas will be rapidly set free, and will soon fill the jar with a gas having all the appearance of common air, but, as we shall soon notice, is possessed of very different properties. This product is called muriatic acid gas, and has till lately been generally held to be the muriatic acid in a state of purity. It has a disagreeable smell, and is exceedingly suffocating. It is almost instantly fatal to animals, when taken into the lungs.

The specific gravity of muriatic acid gas is to that of hydrogen as 15.3 to 1, and 100 cubic inches of it weigh 39.5 grains.

This gas is rapidly absorbed by water, producing much heat. Under the average pressure and temperature, water absorbs more than four hundred times its bulk. This constitutes the liquid muriatic acid, formerly called spirit of salt. The following is a table of the *per centage* of acid, in the liquid acid, of different specific gravities.

Specific Gravity.	Real Acid <i>per cent.</i> in Liquid Acid by Weight.	Real Acid <i>per cent.</i> by Measure.	Boiling Point.	Atoms of Acid Water.
1.5	47.8 40.7 35.5 31.4 28.2	71.7	60°	1 + 3 1 + 4 1 + 5 1 + 6 1 + 7
1.199	25.6	30.5	120?	1 + 8
1.181	23.4	27.5	145?	1 + 9
1.166	21.6	25.2	170	1 + 10
1.154	20.	23.1	190	1 + 11
1.145	18.7	21.4	212	1 + 12
1.136	17.5	19.9	217	1 + 13
1.127	16.4	18.5	222	1 + 14
1.121	15.5	17.4	228	1 + 15
1.094	12.1	13.2	232	1 + 20
1.075	9.91	10.65	228	1 + 25
1.064	8.4	8.93	225	1 + 30
1.047	6.49	6.78	222	1 + 40
1.035	5.21	5.39	219	1 + 50
1.018	2.65	2.7	216	1 + 100
1.009	1.36	1.37	214	1 + 200

From the preceding table it will appear, that the specific gravity of liquid muriatic acid is in the direct ratio of the combined gas, so long as it retains the liquid form. Whether it is combined with water in its gaseous form, is a matter not yet decided. On this point we shall make some observations

in the course of this article. The condensation of the two bodies, with the evolution of heat during combination, are proofs of their great attraction for each other. No liquid acid appears to be capable of existing when the proportion of gas is much more than four or five hundred times the volume of the water. At this strength it appears to contain about 48 *per cent.* of the acid gas. Its specific gravity is 1.5, and its boiling point 60°. Mr. Dalton is of opinion that it consists of  $3 \times 8 + 22$ , or 3 atoms of water, and 1 of acid.

Its boiling point gradually lowers with a less proportion of gas, as may be seen in the table, till it gets to the proportion of 12 *per cent.* of gas, under which it boils at 232°.

Mr. Dalton very justly observes, that when the acid gas is in greater proportion, the gas escapes to bring it to that standard. When, however, it is in a less proportion, the water evaporates till it arrives at the same strength.

The methods of ascertaining the strength of a given acid are various. Let a given measure, or weight, of the acid be saturated with crystallized carbonate of lime in powder, and let the carbonic acid be carefully collected. For every 19.4 by weight of carbonic acid, allow 22 of real muriatic acid.

To a given weight of the liquid acid, let nitrate of silver be added till no more precipitation takes place. Collect the muriate of silver and dry it. For every 100 grains of this muriate allow 17 of muriatic acid.

The process for obtaining liquid muriatic acid consists of the most convenient means of presenting the gas to water intended to absorb it. The common salt is put into a retort of glass in the small, and of iron in the large way. The gas is then received into a set of Woulfe's bottles. (See LABORATORY.) This gas is to be supplied till no more is absorbed.

This liquid is generally of a yellow colour, which is said to be owing to a small portion of iron, since the pure acid is without colour.

The presence of muriatic acid, in the gaseous form, is easily ascertained by ammonia. The two gases combine, forming dense white fumes, which, when condensed, form muriate of ammonia.

The acid in any liquid is detected with great sensibility by sulphate of silver: the acid forms with it a heavy white precipitate, which turns purple by exposure to light. This is the muriate of silver.

Muriatic acid, which has been considered a compound of some inflammable body with oxygen, combines with an additional portion of oxygen, forming the compound called oxy-muriatic acid. This substance was discovered by Scheele, and is obtained by adding oxyd of manganese to liquid muriatic acid: by applying heat a gas comes over exceedingly acid and pungent to the smell, having at the same time a disagreeable effect upon the lungs. When it is collected in a glass jar, it appears of a greenish colour. Its specific gravity is greater than that of muriatic acid gas, being to that of hydrogen as 30.75 to 1: 100 cubic inches weigh 76 grains.

It is much less absorbable by water than muriatic acid gas, the water taking up not more than double its volume.

It supports combustion with most of the inflammable bodies. Several of the metals, as zinc, bismuth, copper, arsenic, and antimony, take fire when introduced to this gas in the state of thin foil or fine powder. This gas, when accompanied with moisture, destroys the colours of vegetable substances, and hence is employed for bleaching linen and cotton.

Chemists are at present divided respecting the nature of this substance, as well as the muriatic acid. In all probability



## MURIATIC ACID.

bility the disputed point may be settled in a short time, so that we may be able to give a more satisfactory account of it under *OXYMURIATIC Acid*. We shall here give a brief detail of the facts and reasonings which have led to some new conclusions, but which we shall not venture to adopt, till we are in possession of an *experimentum crucis* which shall leave but one opinion on the subject.

Since the celebrated discovery of potassium by sir Humphry Davy, the French chemists, Gay Lussac and Thénard, have made some experiments upon muriatic acid gas, with a view to ascertain the component parts of the acid. In all these experiments, they were obliged to adopt one of the following conclusions, namely, that muriatic acid gas is either a compound of real acid combined with about one-fourth of water, or that the acid is a compound of hydrogen with oxymuriatic acid, the latter being regarded as a simple body of a nature similar to oxygen.

The following are the experiments which led to these conclusions. By passing muriatic acid gas over litharge, muriate of lead was formed, and a quantity of water produced. The same took place when oxyd of silver was similarly employed. The water was equal to about one-fourth the weight of the gas. Conceiving, from these facts, that muriatic acid gas was a compound of three-fourths of the real acid with one-fourth of water, they next made some experiments with a view to obtain the acid free from water. For this purpose, they applied the dry vitreous superphosphate of lime, and afterwards the vitreous boracic acid, to the dry muriates; but although they exposed them to a high temperature, no muriatic acid could be disengaged. If, however, a few drops of water were added, the muriatic acid instantly separated in the form of gas. Hence they found, that muriatic acid could not be separated from its compounds without the presence of water.

Their next object was to attempt to separate the oxygen from the oxymuriatic acid, and by that means get the muriatic acid free from water, as they had reason to believe that the former did not contain water. This object, however, they found of no less difficulty than the last. Metallic substances were ineffectual for this purpose, in consequence of their combination with the acid they wished to obtain. When they employed sulphur, they obtained a peculiar compound with the acid, and the sulphur which had before been discovered by Dr. Thomson, under the name of the sulphuretted muriatic acid. Phosphorus also combined with the acid, forming a peculiar substance. Their next experiment was to pass oxymuriatic acid gas over red-hot carbon: at first some muriatic acid was formed, but ultimately they found that carbon had no effect upon oxymuriatic acid when no moisture was present. They further found, that when the oxymuriatic acid was brought in contact with sulphurous acid gas, with nitric oxyd, or with carbonic oxyd, no decomposition took place, except with the presence of water or hydrogen. In the whole of these experiments, the two hypotheses above-mentioned were equally applicable to explain the phenomena. The above chemists, however, were more inclined to give preference to the idea that muriatic acid gas is a compound of real acid with water, than that oxymuriatic acid is a simple body, which, when combined with hydrogen, constituted muriatic acid.

Sir Humphry Davy, who has made some experiments, has explained the facts by the latter hypothesis, and appears so confident of its truth, that although few chemists of eminence are as yet decided on the subject, he has adopted it in his new work, with a new nomenclature relative to oxymuriatic acid and its compounds. The substance which is supposed to unite with hydrogen to form muriatic

acid, is the same with oxymuriatic acid, and is called by sir Humphrey Davy *chlorine*. He represents it as a substance possessing many of the qualities of oxygen, particularly in its attraction for inflammable bodies. All those bodies which are deemed compounds of muriatic acid with the different saline bases, and free from water; or, in other words, all the dry muriates, are deemed by the above chemist compounds of chlorine with the inflammable bases. When muriatic acid gas is heated with a metallic oxyd, he concludes, that the oxygen of the oxyd unites with the hydrogen of the acid, forming water, while the chlorine thus liberated combines with the metal.

The compounds of chlorine with different inflammable bodies, have been named by sir Humphry Davy agreeably to the names of the different bodies combining with chlorine. Its compound with sulphur he has called sulphurane; the same termination "ane" being applied to the name of the base in the other compounds of chlorine. The compounds which contain the second proportion of chlorine are named by the termination "ana" to the base, as "phosphorana," the second compound of chlorine with phosphorus.

It would be worse than useless to give a further view of this theory. Its rejection or final adoption will, in all probability, take place before we come to the article *OXYMURIATIC acid*. Before, however, we quit the subject, we will make a few observations upon the relative grounds on which the two theories stand. This we will shew by explaining several prominent facts on both principles. Sir Humphry Davy burnt eight grains of potassium in 22 cubic inches 8.69 grains of muriatic acid gas, which produced eight cubic inches (.2 grains) of hydrogen. Now the .2 grains of hydrogen were, according to the new hypothesis, let free from the 8.69 grains of muriatic acid, hence the proportions in which they united are 43.1 by weight. Sir Humphry has since stated that this compound consists of equal volumes, or, according to the specific gravity of the gases given by this chemist, 33.1 by weight. But, according to the authority of Dalton, it would be 30 of oxymuriatic acid, and 1 of hydrogen.

In the above experiment, if we consider the .2 grains of hydrogen, produced by burning eight grains of potassium in muriatic acid gas, as resulting from water, it will follow that the oxygen which had been taken from the water by the potassium, was 1.4 grains. This would give 1.6 of water. If we consider potash as the protoxyd of potash, then an

atom of potash will be  $35 + 7 = 42$ , and we shall have  $\frac{35}{7} = \frac{5}{1}$ , so that there is a difference of .2 grains of oxygen

between the calculation and the experiment. Sir Humphry does not appear to have been correct in the experiment above given: The muriatic acid is in too great proportion for the exact formation of muriate of potash. Since, however, the same quantity of hydrogen would result from this or any greater proportion of acid, the quantity of hydrogen to the metal is nearly correct.

If muriatic acid gas be a compound of the real acid with water, the proportions cannot be less than 1 atom of acid to 1 of water, or  $22 + 8 = 30$ . In order, therefore, that the potassium may be in such proportion to the acid gas that every thing may be saturated, the atom of potassium, which is 35, should be added to an atom of acid gas,  $22 + 8 = 30$ . The oxygen of the water, 7 will unite with 35 of potassium, forming 42 of potash. This uniting with 22 of acid, forms 64 of muriate of potash, while 1 of hydrogen will be let free from the atom of water. If the above numbers be considered



dered grains, the volume of the hydrogen will be equal to 40 cubic inches. Comparing this with the above experiment,

we shall have  $\frac{35}{40} = \frac{8}{9.1}$ , so that by calculation, on the

idea that the acid gas contains an atom of water, 8 grains of potassium would afford 9.1 cubic inches of hydrogen, which is more by 1.1 cubic inch than in the experiment. Agreeably to this calculation, the quantity of muriatic acid gas to have been taken up exactly by 8 grains of potassium, would be about 17.4 cubic inches, or 6.86 grains. This would consist of 5.031 of acid, and 1.829 of water; 1.6004 of oxygen from the latter would combine with eight grains of potassium, forming 9.6004 of potash, while .2286 or 9.144 cubic inches of hydrogen will be evolved. The 9.6004 of potash will combine with 5.031 of real acid, forming 14.6314 of muriate of potash. This added to .2286 of hydrogen gives 14.86 grains, the original weight.

The above will very nearly agree with sir Humphry Davy's account of the proportions of hydrogen and chlorine to form muriatic acid. In the last statement the acid is 6.86, consisting of 5.031 of real acid, and 1.829 of water. When the hydrogen, which is .2286, is separated, the 5.031 of real acid will combine with 1.6004 of oxygen, forming 6.6035 of oxymuriatic acid; the volume of which is 8.77. The volume of hydrogen in the same is 9.144 cubic inches. Sir Humphry states them to be equal volumes, which is not far from the above numbers.

From these statements it will appear that both opinions agree in the fact, that an atom of oxymuriatic acid, and an atom of hydrogen, form an atom of muriatic acid gas. It is from this circumstance that the two explanations so exactly agree in all the experiments hitherto made.

The only thing in dispute as to real fact is, whether water is or is not a component part of muriatic acid gas. If the latter is not the case, the oxymuriatic acid is a simple body, and the view taken of it by sir Humphry Davy must be adopted. If, on the contrary, the acid gas be a compound of an atom of water with an atom of real acid, then the oxymuriatic acid will as usual be considered as an atom of real muriatic acid with an atom of oxygen; or an atom of the acid gas with an atom of hydrogen, abstracted from the atom of water which it contains. When muriatic acid combines with any saline base, both parties would agree that a quantity of water would be the result, and the same quantity would be admitted by each. Those of the new opinion would say that the water resulted from the hydrogen of the muriatic acid, and the oxygen of the saline base. Those of the old opinion would account for the water from the acid gas giving its water when the real acid combined the oxyd.

In all attempts to extract oxygen from the muriatic acid, the muriatic acid itself either disappears, or the oxymuriatic acid remains unchanged. Sir Humphry explains this fact by not allowing the existence of oxygen in oxymuriatic acid. Those who hold oxymuriatic acid to be a compound, would say that the muriatic acid would not give up its atom of oxygen, excepting an atom of water were present, to which the acid owes its gaseous form.

The only experiment in which the result can be unequivocal is, in uniting muriatic acid to ammonia, since the latter is the only saline base which does not combine with oxygen. If the gases do not contain free moisture, the muriatic acid ought to combine with the ammonia, while the water of the acid gas is liberated. This experiment was made by Mr. Murray, in which he asserts that water is separated. The experiment has been repeated by sir Humphry Davy, without producing any water, when the salt was not exposed to

the air before examination. Mr. Murray has since made a second trial, with the caution of baking the salt formed by the gases from the atmosphere. Mr. M. still insists that water is obtained from the salt by distillation. We hope by the time we have occasion to resume this subject, the experiment will have been made upon a larger scale, which will settle the point in dispute.

Dr. Henry has, on several occasions, tried the effect of electricity upon muriatic acid. Traces of hydrogen gas have been frequently found to be the result. This ingenious experimenter, from some recent experiments, has concluded, that when the gas is completely free from hygrometric moisture, no hydrogen gas is produced. If, therefore, the muriatic acid contains water of combination, it is not within the influence of electricity.

MURJATTAH, in *Geography*, a river of Bengal, which runs into the bay of Bengal, N. lat.  $21^{\circ} 43'$ . E. long.  $89^{\circ} 38'$ .

MURIC, a town of Japan, in the island of Nippon; 75 miles S.W. of Meaco.

MURICHOM, a town of Bootan; 48 miles N. of Beyhar.

MURICIA, in *Botany*, so denominated by Loureiro, from *Murex*, the celebrated purple-dyeing shell-fish of the ancients, in allusion to the purple colour, and muricated figure, of the fruit. Loureir. Cochinch. 596. Class and order, *Monoecia Syngenesia*, Lour. (rather *Monoecia Polyadelphia*.) Nat. Ord. *Cucurbitaceæ*, Linn. Juss.

Gen. Ch. Male. *Cal.* the outermost a large, inflated, obtuse, single-flowered sheath. *Perianth* in five deep, awl-shaped, striated, coloured, spreading, equal segments. *Cor.* bell-shaped, of five ovato-lanceolate, ribbed, spreading petals. *Stam.* Filaments three, short, thick, triangular, dilated and connected at the base; anthers three, or rather five, those on two of the filaments being double, with two divaricated lobes, auricled at the base, the third simple, all distinct, with a pollen-bearing line at the outside.

Female, on the same plant, scattered. *Cal.* and *Cor.* as in the male. *Pist.* Germen between the sheath and perianth, oblong-ovate, villous; style round, thick, as long as the stamens, slightly three-cleft at the top; stigmas three, horizontal, arrow-shaped. *Peric.* Berry large, ovate, muricated, of one cell. *Seeds* numerous, large; orbicular, reticulated, tuberculated at the edge.

Eff. Ch. Male, Calyx in five deep segments. Petals five. Filaments three.

Female, Calyx in five deep segments. Petals five. Style nearly simple. Berry muricated, of one cell. Seeds orbicular, tuberculated.

1. *M. cochinchinensis*. Native of China and Cochinchina. A large climbing shrub, with a thick, woody, branched stem. *Tendrils* foliary. *Leaves* stalked, alternate, five-lobed, smooth, veiny, finely toothed; the three upper lobes pointed, two lower (or lateral) ones bluntish and short. *Flowers* lateral, foliary, pale yellow, on long stalks. *Berries* of a reddish purple both within and without, rather fleshy, with brown seeds, imbedded in the pulp. *Perianth* black. *Sheath* green. The fruit has an insipid taste, and no smell. It is used to colour wafers, cakes, or other catables, of a fine purple. The seeds and leaves are reported by Loureiro to have an opening and cleansing quality, removing obstructions in the liver and spleen, &c.

MURILLIO, DON BARTOLOME ESTIVAN, in *Biography*, one of the most pleasing painters Spain ever produced. He was born at Pilas, near Seville, in 1613, and having exhibited very early an inclination for the art, became a disciple of Juan del Castillo, whose favourite subjects were fairs and markets;



markets; of which Murillo painted many pictures before he left him to go to Madrid. There he became known to, and favoured by, Velasquez, who enabled him to see the works of Titian, Rubens, and Vandyke, which were in the royal palaces, and the houses of the nobility. Of these he copied many, under the auspices of his friend, and having very much advanced himself in the knowledge and practice of his art, he returned to adorn the city of Seville with his performances.

This justly esteemed artist never went to Italy for his improvement, and the Spanish authors boast of this, forgetting that if Murillo did not visit that seat of the arts, at least he derived much of the excellence he possessed from the works of its professors; he does not appear to have had so high a stamp of genius as to have advanced so far as he did without their assistance.

He was employed upon his return to Seville to paint for most of the principal churches there, and the pictures he produced, which were of subjects collected from holy writ, and the legends of the Romish calendar, were remaining in their original stations when the French so basely took possession of Spain. They, at least many of them, are most probably too good to have escaped transportation to Paris, that grand depôt of plunder, where they cannot fail to receive their just portion of applause.

The style of Murillo is his own. He copied his objects from nature, but combined them ideally; that is, his backgrounds are generally confused and indistinct, and the parts very much blended together, with a loose pencil and indeterminate execution; but most of them have a very pleasing effect, and perhaps the principal objects acquire a degree of finish and beauty from this circumstance. An instance may be recollected in his very pleasing picture of the good shepherd, an excellent copy of which is at the marquis of Stafford's gallery.

It was in small pictures of familiar life that this artist most completely succeeded, although the pictures above-mentioned in the churches of Seville are exceedingly large, 16 or 18 feet high some of them, and containing an immense number of figures, as is required in such subjects, as Christ feeding the Multitude, St. John preaching, St. Thomas giving alms to the Poor, &c. &c. In these pictures, skilfully wrought as they are, he does not appear to have penetrated the arcana of grandeur or style; even his expressions are often of a mean character in the most dignified personages; but in the amiable and tender sentiments, which are expressed by the silent actions of the human features, he was eminently successful. His pictures captivate very much by the gentleness and suavity of their colour, and the softness of the execution.

It was not only at Seville that Murillo's talents were called into action, Granada, Cadiz, and Cordova, each contained altar-pieces of his painting, and his smaller works were widely dispersed through the country. He enjoyed his renown to the advanced age of 72, when he died, universally lamented by those who felt any interest in the arts.

**MURILLO**, in *Geography*, a town of Spain, in the province of Aragon; 16 miles S. of Jaca.

**MURINA**, or **MURINES**, *μυρίνα οἶνος*, in *Antiquity*, a delicious sweet wine, medicated with spices. It was a kind of hippocras, and the usual drink of the ladies.

**MURING**, the walling, or raising the wall of a building. See **WALL**.

**MURIPADOO**, in *Geography*, a town of Hindoostan, in the circar of Cicacole; five miles N. of Tiakely.

**MURIS**, **JOHN DE**, in *Biography*. See **DE MURIS**.

**MURITZ**, in *Geography*, a lake of Mecklenburg, S. of Warren.

**MURKAH**, a town of Hindoostan, in Allahabad, on the Jumna; 50 miles W.N.W. of Allahabad.

**MURLAVADDY**, a town of Hindoostan, in Myfore; 21 miles S. of Bangalore.

**MURLIDUR**, or **MURLIDHER**, a name of the Hindoo deity **KRISHNA**, of whom an account is given under that article: and under **MURLY**, the supposed origin and meaning of the name.

**MURLY**, or **MURLI**, a name given in the East Indies to bands of females retained in eminent temples as choristers. The word seems descriptive of their musical avocation, as it means, in a dialect of the country, a flute or pipe. Hence Krishna, the Apollo of India, when seen with the pipe in his hand as he is in Sonnerat, Maurice's Indian Antiq., and in several plates of the Hindoo Pantheon, is called Murlidur, or Mudlidher; more correctly, perhaps, Murlidhara, meaning *pipe-bearer*; as Siva is in like manner surnamed Gangadhara, from bearing the river Ganga, or Ganges, mythologically, on his head. Under the article **JEJURY**, notice is taken of the numerous bands of Murlis kept in that splendid temple. At the conclusion of that article they are said to be there called *Murty*, and reference is made to that word; but it was by mistake: Murly is the word, and this the article intended.

**MURMANSKOI BEREG**, in *Geography*, the N.E. coast of Russian Lapland, in the government of Archangel, between N. lat. 63° and 69°.

**MURNAU**, a town of Bavaria; 10 miles S. of Weilheim.

**MURNIG SEE**, a lake of Carinthia; 10 miles N.W. of Welach.

**MURO**, a town of Naples, in the province of Otranto; six miles N.N.E. of Alessano.—Also, a town of Naples, in Basilicata, the see of a bishop, suffragan of Conza; 11 miles S.E. of Conza. N. lat. 40° 47'. E. long. 15° 32'.—Also, a town of Majorca, containing a convent, a good hospital, and several chapels; abounding in all sorts of grain, fruits, vegetables, and a number of cattle.—Also, a mountain of Portugal, which forms a western boundary to the province of Tras los Montes.

**MUROR**, a town of Hindoostan, in the circar of Mahar; 38 miles N. of Neermul.

**MURORUM DOMESTICUS**. See **DOMESTICS**.

**MUROS**, or **MUROS**, in *Geography*, a small sea-port town of Spain, in the province of Galicia, situated between Bayona and Corunna, upon the N. bank of a small gulf, formed by the mouth of the Tambre: on the other side is "Noya" and its fertile plain, where is one of the beautiful dock-yards of Galicia for the construction of ships.

**MURPHY**, **ARTHUR**, in *Biography*, a considerable dramatic writer, was born, according to his own account, which he extracted from his mother's prayer-book, at Clooniquin, in the county of Roscommon, in Ireland, on the 27th of December, 1727. His father, Richard Murphy, who was a merchant, failed, in 1729, in one of his own trading-vessels for Philadelphia, but the voyage was truly disastrous; the ship was lost, probably in a violent storm, and neither master nor one of the ship's company were ever afterwards heard of. From this time the care of the subject of the present article devolved upon his mother. In 1735 she removed, with her children, to London. Arthur did not remain long in the metropolis, he was sent for to Boulogne by his aunt, Mrs. Plunkett, his mother's sister. At ten years of age he was placed in the English college at St. Omer's, where he remained six years; and was in 1744 dismissed.



miled to London, being then seventeen years old. In speaking of his college exercises, he says from the middle of the second year he obtained the first place, and, excepting three times, maintained his ground through five successive years. In the middle of the year in poetry, the young scholar stood a public examination of the *Æneid* by heart. The Jesuits were arranged in order; the rector of the college examined his pupil, and never once found him at fault: at the end of half an hour, the rector took a pen to write Murphy's eulogium. The scholars all went by assumed names, Murphy changed his to *Arthur French*; in reference to this, the words of the rector were, "Gallus nomine, Gallus es, qui simul ac alas expandis, ceteros supervolitans." "This," says Mr Murphy, towards the close of his life, "at the time filled me with exultation, and even now is remembered by me with a degree of pleasure. I often look back with delight to my six years' residence in the college of St. Omer's. During that time I knew no object of attention but Greek and Latin, and I have thought, and still think it, the happiest period of my life." On his return to England, he resided with his mother till August 1747, when he was sent to Cork, to an uncle, in whose counting-house he was employed till April 1749. After this his uncle, Jeffery French, would have sent him to Jamaica to overlook a large estate which he possessed in that island, but having very little taste for that sort of business he returned to his mother in London. This was in the year 1751. He soon became acquainted with the wits of the day, and in October 1752, he published the first number of "The Gray's Inn Journal," a weekly paper, which he continued for two years. On the death of his uncle, Jeffery French, he was much disappointed in not finding his name mentioned in his will, and the more so as he had contracted debts, in faith of a good legacy, to the amount of 300*l*. In this embarrassed state, at the advice of the celebrated Foote, he went on the stage, and appeared for the first time in the character of Othello. In one season, by the help of strict economy, he paid off his debts, and had at the end of the year 400*l*. in his pocket. With this sum he determined to quit the dramatic line.

In 1757, he offered himself as a student in the Middle Temple, but was refused admission, on the ground that he had been on the stage. He was at this time engaged in a weekly paper, called "The Test," undertaken chiefly in favour of Mr. Fox, afterwards lord Holland, which ceased on the overthrow of the administration to which his lordship was attached. Mr. Fox interested himself very much in the favour of Murphy, spoke in his behalf to lord Mansfield, and he was admitted, through his means, as a student in the Society of Lincoln's Inn. This was in the year 1757; he now attended the law in conjunction with other subjects more adapted to his taste, and which proved more profitable to him. In the beginning of 1758, he produced the farce of "The Upholsterer," which was very successful, and which he modestly says owed its prodigious success to the acting of Garrick, Yates, Woodward, and Mrs. Clive. Before the end of the same year he finished "The Orphan of China," which is founded on a dramatic piece, translated from the Chinese language, in Du Halde's "History of China." The representation of this play gave Mrs. Yates the first opportunity of displaying her theatrical powers, and confirmed her reputation as one of the most excellent actresses who have trod the English stage. His "Desert Island," a dramatic poem, and his "Way to keep Him," a comedy of three acts, afterwards enlarged to five acts, the most popular of all his dramatic compositions, appeared in the year 1760. After Mr. Murphy had been called to the

bar, he occasionally went the circuit, but not making the profession the object of his life, he never obtained much practice. A variety of other dramatic pieces, consisting of tragedy, comedy, and farce, successively proceeded from his fertile pen. For the ground-work of these he was generally obliged to a foreign original, but he never spared pains to fit them for the English theatre. To this sort of business he refers in his prologue to his "Zenobia."

"Not to *translate* our bard his pen doth dip,  
He takes a play, as Britons take a ship;  
They heave her down; with many a sturdy stroke  
Repair her well, and build with heart of oak;  
To every breeze set Britain's streamers free,  
*New* man her, and away again to sea."

"This," says one of Mr. Murphy's biographers, "is an ingenious illustration of the business of dramatic alteration, but cannot elevate it to the rank of original composition. Mr. Murphy's plays generally acted well, and had temporary success, but they made little addition to the true theatrical stock of the country." His farces still are acted, so also are his "Way to keep Him," and the "Grecian Daughter." At one period of his life, as we have seen, he engaged in the field of political warfare: he published several occasional poems, and gave Latin versions of some popular English poems; by the latter he obtained great credit as an elegant scholar. In 1786, he published his works collectively, in seven volumes, octavo. In 1792, he appeared as one of the biographers of Dr. Johnson, in "An Essay on his Life and Genius;" and in the following year he published a translation of Tacitus, in four volumes, quarto, dedicated to the late Edmund Burke. To this work, which is done in a respectable and even masterly manner, he has added "An Essay on the Life and Genius of Tacitus;" also, historical supplements and frequent annotations and comments. Mr. Murphy continued to write to an advanced age, and in 1798 he published his "Arminius," intended to excite the nation to measures of war, which he thought, to use the cant of politicians, "to be just and necessary." Through his interest with lord Loughborough, he obtained the office of one of the commissioners of bankrupts, to which, during the last three years of his life, was added a pension of 200*l*. a-year. Mr. Foote has given an interesting account of the close of Mr. Murphy's life, from which it appears he had perfectly reconciled his mind to the stroke of death: when he had made his will, and given plain and accurate directions respecting his funeral, he said, "I have been preparing for my journey to another region, and now do not care how soon I take my departure." On the day of his death, which was on the 18th of June, 1805, he frequently repeated the lines of Pope:

"Taught, half by reason, half by mere decay,  
To welcome death and calmly pass away."

Besides the works already mentioned and alluded to, Mr. Murphy was author of the *Life of Garrick*; and a translation of Sallust, from his pen has appeared as a posthumous work. He was a man of great urbanity of manners, and much regarded by his friends, whom, to the last, he used to entertain with anecdotes of the literary acquaintance of his younger years, related with humour and vivacity. Foote's *Life of Murphy*. Gent. Mag. Monthly Mag.

MURR ISLANDS, in *Geography*, a cluster of small islands, near the S. coast of Labrador. N. lat. 50° 32'. W. long. 59° 8'.

MURRA, a town of Arabia, in the province of Yemen; 10 miles N.W. of Zebid.

MURRA,



MURRA, among the *Ancients*, a fofile fubftance, found in Parthia and Carmania, of a fine fmell, and beautiful variety of colours.

It was thought to be fome humour condensed in the earth by the heat of the fun. See MURRIINE.

MURRA was likewife a dry perfume, made of the murra reduced to powder.

MURRAIN, GARGLE, a mortality, or contagious difeafe among cattle.

Murrains are occafioned various ways, but principally by a hot, dry feafon; or rather by a general putrefaction of the air, which begets an inflammation in the blood, and a fwelling in the throat, with other fymptoms: the difeafe foon proves mortal, and is communicated from one to another.

The fymptoms are, generally, a hanging down, or fwelling, of the head, rattling in the throat, fhort breath, palpitation of the heart, flagging, abundance of gum in the eyes, &c. breath hot, and tongue fhining.

The moft remarkable murrain we hear of, is that mentioned in the *Philofophical Tranfactions*; which fpread itfelf through Switzerland and Germany, into Poland, &c. See MIST.

MURRAY, WILLIAM, earl of Mansfield, in *Biography*, a diftinguifhed lawyer and judge, the younger fon of David viscount Stormont, a peer of Scotland, was born at Perth, on the fecond of March, 1704—5, and at the age of three years was removed to London, where he received his early education. He was admitted a king's fcholar at Weftminfter in the year 1719, and in a very fhort time diftinguifhed himfelf by the excellence of his declamations, which were regarded as prognoftics of that eloquence for which he was afterwards fo much celebrated at the bar, and in both houfes of parliament. He was admitted a ftudent of Chriftchurch, Oxford, on the 18th of June, and in about four years he took his firft degree, and in 1730 his degree of M.A., at which period he left the univerfity. He had fupported his claffical reputation at college by a copy of Latin verfes on the death of George I., and an elegant Latin oration in praife of Demofthenes. From Oxford he went to the continent, and fpent fome time in a tour through France and Italy, after which he entered himfelf at Lincoln's Inn, and engaged ferioufly in the ftudy of the law. From the moment that he was called to the bar, he feems to have fcorned the idea of rifing by the flow drudgery of common practice. He cultivated the talent and graces of fine elocution. In confequence of a difplay of his abilities in an appeal caufe before the houfe of lords, he rofe rapidly into fame and bufinefs. So fudden was the change, that he has been heard to fay, he fcarcely knew an interval between the want of employment and the receipt of 3000*l. per annum*. Mr. Murray at a very early period engaged the friendship of Pope, who left behind him feveral teftimonies of his fingular affection for this rifing lawyer: he addreffed to him an imitation of the firft ode of the fourth book of Horace, in which he paints his friend as

“ Noble and young, who ftrikes the heart  
With every fprightly, every decent part.”

The natural and acquired advantages which characterized the eloquence of Mr. Murray were fo conspicuous, even on the fpur of an occafion, and his perception fo quick, as to enable him to fhine upon any emergency; a circumftance of this kind occurred in 1737, when he was junior counfel in a confiderable caufe: his leader was fuddenly feized in court with a fit; the duty of courfe fell to the lot of the junior, who wifhed to decline it for want of time to make

himfelf mafter of the cafe. The court adjourned for an hour, and with this fhort preparation Mr. Murray made fo able and eloquent a defence, as not only to reduce the damages to a mere trifle, but to gain the reputation of a moft prompt, perfpicuous, and eloquent pleader. In 1738, there were fifteen or fixteen appeals heard and determined in the houfe of lords, in eleven of which Mr. Murray was engaged. Among the feveral interefting caufes in which he was employed, one of great importance was that in the cafe of the provoft and corporation of Edinburgh, for the punifhment of whom, on account of mifconduct in the cafe of captain Porteus, an act of parliament was framed. Mr. Murray, their counfel, oppofed it in all its ftages, and in both houfes, and for his exertions he was prefented with the freedom of the city of Edinburgh in a gold box. The chancery-bar was that to which he had hitherto confined his practice; but in 1742, his being raifed to the office of folicitor-general, gave a wider fcope to his professional talents. In this fame year he took his feat in the houfe of commons as reprefentative for Boroughbridge, and from this time he became the ftrenuous defender of the duke of Newcastle's miniftry, and was frequently the fpeaker oppofed to Mr. Pitt, who then began to diftinguifh himfelf in parliament. In 1746, he was called upon to take an active part againft the rebel lords, and exerted all his talents on the occafion, particularly in the impeachment of lord Lovat, whose guilt he proved, but in fo candid a manner, that he received the acknowledgments of the culprit himfelf. In 1754, Mr. Murray was promoted to the office of attorney-general, and in 1756, on the death of fir Dudley Ryder, he was raifed to the high dignity of lord-chief juftice of the court of king's bench, and at the fame time was advanced to the peerage by the ftyle and title of baron Mansfield of the county of Nottingham. From this period lord Mansfield may be confidered as at the head of the judicature in this kingdom; “ and although,” fays his biographer, “ his conduct and principles have undergone fevere cenfure in the violent party contentions which have agitated the nation during the greater part of the prefent reign, yet his character feems permanently eftablifhed, as one of the moft able, the moft eloquent, the moft enlightened, and, in his legal capacity, feparated from his political, the moft upright judges who have ever occupied the bench. His behaviour towards the gentlemen of the bar, and the fuitors to the court, was equally courteous, obliging, and dignified, and no man was more attentive to the public accommodation in his difpatch of bufinefs. His quicknefs of apprehenfion, denoted by an eye of fire, enabled him at once to difcover where the force of a caufe lay. This he ftated with wonderful clearnefs, and placed in fo ftriking a point of view, that he feldom failed to difpofe the minds of the hearers to follow that impulfion which he wifhed to give them.” It is much to the praife of lord Mansfield that he was uniformly a friend to religious toleration, and would probably, in the prefent day, have gone much farther than the ideas of mere toleration will carry a man; he would probably have concurred to blot out from the ftatute-books all laws that inflict punifhment, or difability, on account of religious opinions. On various occafions he fet himfelf againft vexatious profecutions founded upon intolerant laws, and in the fheriffs' caufe, as it is denominated, in 1767, he greatly diftinguifhed himfelf by his found and forcible reafoning in favour of the Proteftant diffenters, whom the paltry politics of the corporation of London had habitually fubjected to the fine for refufing to ferve the office of fheriff, while they lay under the fevere penalties of the teft and corporation acts fhould they have ferved it without qualifying, by taking the facrament of the

Lord's



Lord's supper in the church of England, with which they could not comply. His exposure of the tyrannical injustice of such a dilemma carried with it a conviction that put an end to the practice. In speaking of the revocation of the edict of Nantes, as introductory to persecutions in France, his lordship said there was no occasion for that measure, "the Jesuits needed only to have advised a plan similar to what is contended for in the present case: make a law to render them incapable of office; make another to punish them for not serving. If they accept, punish them (for it is admitted on all hands, that the defendant, in the cause before your lordships, is prosecutable for taking the office upon him): if they accept, punish them; if they refuse, punish them; if they say yes, punish them; if they say no, punish them. My lords, this is a most exquisite dilemma, from which there is no escaping; it is a trap a man cannot get out of; it is as bad a persecution as that of Procrustes: if they are too short, stretch them, if they are too long, lop them."

It must not, however, be concealed, that lord Mansfield was, in politics, a favourer of high maxims in government, and directly hostile to those popular principles which were the subject of so much contention in the early part of this reign. He maintained that the jury, in all cases of libel, were only judges of the fact of publication, and had nothing to do with the law as to libel or not; and in all the great causes concerning the liberty of the press, he ever attached himself to the court, so that, as it has been well said, "his conduct as a politician will probably not be dwelt upon by an encomiast, as that part of his public life which does him most honour." In 1776, he was advanced to the dignity of an earldom, with the remainder to the Stormont family, as he had no issue of his own. At this period the popular disputes were subsiding, and he probably expected to wear his well-earned honours in peace, but the disgraceful riots in 1780 brought upon him a storm for which he was totally unprepared. Although the part he had taken in the liberal bill for the relief of the Roman Catholics was by no means conspicuous, yet, as the head of the executive justice of the kingdom, he was marked out for the attacks of a mob, who had, unquestionably, no other object than the subversion of all law and order. According to Murphy, whom we have lately noticed, his lordship made his escape, in disguise, before the flames blazed out. His house in Bloomsbury-square was, with all its furniture, pictures, books, manuscripts, and other valuables, entirely consumed by fire. He bore his calamity with great equanimity, and refused to take any steps for procuring a compensation for his losses. He once, in the house of lords, made a very pathetic allusion to it, when, having given his opinion upon a legal matter, he said, "I speak this not from books, for books I have none." No man was, in all respects, better qualified to enjoy the "*Otium cum dignitate*" than lord Mansfield, yet he was not in haste to withdraw himself from scenes of business, and he continued on the bench till 1788, when he resigned his seat, having filled it with distinguished reputation for thirty-two years. A respectful and affectionate address from the bar, signed by all the counsel who had practised in the court of king's bench during the time he was on the bench, was transmitted to him by Mr. Erskine: in this address they say, "we desire, in this manner, affectionately to assure your lordship, that we regret, with a just sensibility, the loss of a magistrate, whose conspicuous and exalted talents conferred dignity upon the profession; whose enlightened and regular administration of justice made its duties less difficult and laborious, and whose manners rendered them pleasant and respectable."

VOL. XXIV.

The faculties of earl Mansfield still continued clear, though their vigour was abated, and he retained his recollection till within a few days of his decease, which took place without a groan, on the 20th of March 1793, in the 89th year of his age. His remains were deposited in Westminster Abbey. The private virtues of lord Mansfield were universally acknowledged, and the singular amenity of his manners, in which vivacity and gaiety were tempered with elegance and decorum, rendered him the delight of all the social circles which he frequented. In his early years, he had undoubtedly been friendly to Jacobitical principles, but from his first entrance into public life, he suffered no symptoms of his original attachments to appear, excepting, perhaps, a certain bias always discernible through all the variations and vicissitudes of his political career, in favour of prerogative. His person was graceful, the tones of his voice exquisitely melodious, and his style of oratory clear, dignified, calm, and persuasive. Halliday's *Life of Earl Mansfield*. New Ann. Register, 1797. Furneaux's *Letters to Mr. Justice Blackstone*.

MURRAY, JOHN-ANDREW, a distinguished physician, was born at Stockholm in the year 1740, in which city his father was preacher to the German congregation. His ancestors were a Scots family, who had fled from their country during the usurpation of Cromwell, and settled in Poland and Prussia. He was carefully instructed in his early years by his father, and till the age of fourteen attended the German lyceum, where he studied the languages, history, philosophy, and the mathematics. He was afterwards put under the care of a private tutor, and in 1756 he removed to Upsal, and had the benefit of the instructions of Linnæus, for whom he conceived the highest veneration and esteem, which continued through life; and with whom he subsequently maintained an uninterrupted literary correspondence. In 1759 he took a journey through the southern provinces of Sweden, and thence to Copenhagen, with a view to extend his acquaintance with natural history; and in 1760 he proceeded to Gottingen, where his brother, John Philip, was professor of philosophy. Here he resumed his studies with great industry, and devoted some time to the English, French, and Italian languages. In 1763, he took the degree of M.D., and by a special licence from the Hanoverian government, gave lectures in botany: and, in the following spring, he was appointed extraordinary professor of medicine in that university. From this time his reputation rapidly extended: he was elected a member of the Academy of Sciences at Stockholm in 1768, and of the Royal Society of Gottingen in 1770; and, in the course of a few years afterwards, of most of the learned societies in Europe. In 1769 he was appointed to the actual professorship of medicine, and made doctor of the botanic garden. Linnæus had already honoured him by giving the name of *Cassida Murrayi* to an insect which he had discovered; and in 1771 he gave the name of *Murraya exotica* to an East Indian tree. Professor Murray was still farther honoured by receiving the title of the order of Vasa from the king of Sweden in 1780; and by being raised to the rank of privy-counsellor by his Britannic majesty in 1782. In the beginning of 1791 he was attacked with a spurious peripneumony, from the effects of which the lungs never recovered, and which ultimately proved fatal, on the 22d of May in that year, when he had attained the age of fifty-one.

Murray was a man of sound judgment, great activity and industry, and extensive information. He constantly rose early, and laboured till a late hour in his closet, unless prevented by his avocations in the botanic garden. Hence he was enabled to compose a number of tracts, on various subjects, in

X x

botany,



botany, natural history, medicine, pharmacy, and medical literature. His principal work, however, was on the subject of the *materia medica*, and had occupied a large portion of his time and attention. It was published at different times, and entitled "*Apparatus Medicaminum, tam simplicium quam preparatorum et compositorum, in Praxeos adjuvamentum consideratus*," and consists of six volumes, octavo. This work was the object of his anxiety and attention, until the day before his death, when he corrected part of the tenth sheet of the sixth volume, and conigned the completion of it to his friend and physician Dr. Altorf. Among his other productions, are, "*Opuscula in quibus Commentationes varias, tam medicas quam ad Rem naturalem spectantes, retractavit, emendavit, auxit*," vol. i. Gott. 1785; ii. 1786. "*Commentates de Hepatitide, maxime Indiæ Orientalis*," ibid. 1780. "*Spinæ bifidæ mala ossium conformatione inita*," ibid. 1780. "*Retzii Primæ Linæ Pharmacæ*," translated from the Swedish, 1771. "*Rosenstein's family Dispensatory*," translated from the same, Leipzig, 1781. In the Transactions of the Royal Society of Gottingen, are inserted many valuable papers of professor Murray's, chiefly relating to the most remarkable plants cultivated in the botanic garden; and his descriptions are deemed models of elegance and accuracy. Gen. Biog.

MURRAY *Frith*, in *Geography*, a large bay of the German sea, on the E. coast of Scotland, and S. of the county of Murray, whence its name: anciently "*Æstuarium Vavaris*."

MURRAY *Harbour*, a harbour on the E. coast of the island of St. John, in the gulph of St. Laurence. N. lat. 46°. W. long. 62° 20'.

MURRAY'S *Islands*, several small islands on the S.W. coast of the county of Kirkcubright, at the mouth of Fleet-bay; 11 or 12 miles N.N.E. of Burrow Head.

MURRAY *Township*, a township of Upper Canada, in the county of Cumberland, lying northward of the isthmus which joins the county and peninsula of Prince Edward to the Main. It is washed by the waters of lake Ontario and the river Trent, as well as those of the bay of Quinte.

MURRAYA, in *Botany*, originally written MURRÆA, was named by Koenig in honour of John Andrew Murray, an illustrious Swede, knight of the order of Vasa, and professor of botany at Gottingen, born in 1740, and who died in 1791. (See MURRAY). He was the author of several tracts on natural history, and enjoyed so much of the confidence of his great preceptor Linnæus, as to be entrusted by him with the editing of the 13th edition of the *Systema Vegetabilium*. He likewise published the 14th edition of the same work, after its author's death, in 1784. It is to be regretted that in the execution of his task, he did not follow the original principle of Linnæus, in introducing the new genera from the *Supplementum* and other sources. These are disposed by Murray according to their technical characters, and not their natural affinities. Although this was subsequently found to be the same plant as the Linnæan CHALCAS, the latter name has been universally allowed to give way to that of MURRAYA.—Linn. Mant. 554. Schreb. 284. Willd. Sp. Pl. v. 2. 548. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 36. Juss. 261. Lamarck Illustr. t. 352. Gærtn. t. 93. (Chalcas; Linn. Mant. 11. Marfana; Sonnerat. Ind. Or. v. 2. 245. t. 139.)—Class and order, *Dicandria Monogynia*. Nat. Ord. *Aurantia*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, very small, cloven into five, linear, erect, roundish, remote, permanent segments. *Cor.* bell-shaped, of five, lanceolate petals, spreading at their tips. Nectary bell-shaped, short, inclosing the germen. *Stam.* Filaments ten, awl-shaped, the length

of the flower; anthers somewhat oblong. *Pist.* Germen superior, roundish; style thread-shaped, angular, longer than the stamens; stigma flattish, warty, angular. *Peric.* Berry rather pulpy, of one cell. *Seed* solitary, large, obovate, furrowed on one side.

Eff. Ch. Calyx five-cleft. Corolla of five petals, bell-shaped. Nectary surrounding the germen. Berry single-seeded.

1. *M. exotica*. Ash-leaved Murraya. Linn. Mant. 563. Murray in Comm. Gotting. v. 9. 186. t. 1. (Marfana buxifolia; Sonnerat. Ind. Or. v. 2. t. 139.)—A native of the East Indies, and introduced at Kew in 1771, where it flowers in August and September. This is a shrub or small tree, about six feet in height, whose trunk is branched, and covered with a greyish bark. Leaves alternately pinnate, composed of three pairs of leaflets, with an odd one; leaflets alternate, on short stalks, obovate, bluntish, rigid, smooth, resembling those of the common *Buxus*, whence its French appellation *Buis de Chine*. Flowers corymbose, white, somewhat like an orange-flower, but about half the size; their scent is said to be somewhat like that of Jasmine, but by no means powerful. Berries globular, pointed, tubercled, red. Seed large, whitish or pale straw-coloured.

This plant is extremely well figured in Rumph. Amboyn. v. 5. 29. t. 18. f. 2, under the name of *Cantunium japonicum*. Loureiro also, in his *Flora Cochinchinensis*, 271, describes it as *Chalcas japonica*. We are unable to discover what is meant by the same author's *Chalcas paniculata*.

MURRAYSHIRE, or ELGIN, in *Geography*. See MORAYSHIRE.

MURRE, in *Ornithology*, a name given in some parts of England to the razor-bill. See ALKA.

MURRECOW, in *Geography*, a town of Hindoostan, in Benares; 14 miles S. of Jionpour.

MURREY, in *Heraldry*, a kind of purple colour, called also *sanguine*.

MURRHINA, in *Antiquity*, a kind of sweet medicated wine.

MURRINE, MURRHINUS, *Messure*, an appellation given to a delicate sort of ware, brought from the East, of which cups and vases were made, which added not a little to the splendour of the Roman banquets.

Critics are divided concerning the matter of the *pocula*, or *vasa murrhina*, *murrina*, or *murrea*. Some will have them to have been the same with our porcelain, or china-ware.

The generality hold them to have been made of some precious kind of stone; which was found chiefly, as Pliny tells us, in Parthia, but more especially in Carmania. Arrian tells us, that there was a great quantity of them made at Diospolis in Egypt. This he calls another sort of murrhina work; and it is evident, from all accounts, that the murrhina of Diospolis was a sort of glass-ware, made in imitation of the porcelain or murrha of India. There is some difference in the account given by Pliny and Martial of the murrhina vasa. The first author says, that they would not bear hot liquors, but that only cold ones were drank out of them. The latter, on the other hand, tells us, that they bore hot liquors very well. If we credit Pliny's account, their porcelain was much inferior to our's in this particular. Some conjecture them to have been of agate, others onyx, others of coral. Baronius, doubtless, was farthest out of the way, when he took them to be made of myrrh, congealed and hardened. Some have supposed these vessels to be made of crystal, but this is contrary to the account of all the ancients.

The Greeks had the words *κρύσταλλος*, for crystal, and *συγγρη* for myrrh, very common among them, and therefore if



Pompey is recorded as the first who brought these murrine vessels out of the East, which he exhibited in his triumph, and dedicated to Jupiter Capitolinus. But private persons were not long without them. So fond, in effect, did the Roman gentry grow of them, that a cup which held three sextaries was sold for seventy talents. T. Petronius, before his death, to spite Nero (or as Pliny expresses it, *ut mensam ejus exheredaret*, to disinherit his table), broke a balon, *trulla murrhina*, valued at three hundred talents, on which that emperor had set his heart.

MURTEZABAD, in *Geography*, a town of Asiatic Turkey, in Natolia; 12 miles N. of Angura.

The word comes from the Saxon *morth*, *death*; which some will have to signify a violent death; whence the barbarous Latin *murdrum*, and *mordrum*.

The crime of murder is punished with death in almost all nations.

In order to constitute the crime of murder, it must be committed by a person of sound memory and discretion: for a lunatic and infant are incapable of committing any crime. Besides, the unlawfulness of this crime arises from the killing without warrant or excuse; and there must be also an actual killing to constitute murder; and this may be by poisoning, striking, starving, drowning, and a thousand other forms of death; the most detestable of which is poison, because it is the least capable of being prevented either by manhood or forethought. There was also, by the ancient common law, one species of killing held to be murder, which is hardly so at this day, nor has there been any instance in which it has been held to be murder for many ages past, *i. e.* by bearing false witness against another, with an express premeditated design to take away his life, so that the innocent person be condemned and executed. The Gothic laws punished in this case the judge, the witnesses, and the prosecutor; and, among the Romans, the *lex Cornelia, de Siccariis*, punished the false witness with death, as being guilty of a species of assassination. If a man does such an act, of which the probable consequence may be, and eventually is, death; such killing may be murder, although no stroke be inflicted by himself. In order to make the killing murder, it is requisite that the party die within a year and a day after the stroke received, or cause of death administered; in the

Formerly, murder was restrained to a clandestine and treacherous killing. Thus, "Murdritus homo antiquitus X x 2 dicebatur."



dicebatur, cujus interfector nesciebatur ubicumque, vel quomodocumque esset inventus. Nunc adjunctum est, licet sciatur quis murdrum fecerit, homicidium per proditionem." Leges Hen. I. "Arthurum nepotem propriis manibus per proditionem interfecit, pessimo mortis genere, quod Angli murdrum appellant." Matth. Paris, an. 1216.

The punishment of murder, and that of manslaughter, were formerly one and the same, both having the benefit of clergy; so that none but unlearned persons, who least knew the guilt of it, were put to death for this enormous crime. But now, by 23 Hen. VIII. c. 1, and 1 Edw. VI. c. 12, the benefit of clergy is taken away from murder through malice prepenfe. See *Hanging in CHAINS*. Blackit. Comm. book iv.

MURTHUR, *Appeal of*. See *APPEAL*.

MURTHUR, *Self*, is otherwise called *suicide*. See *FELO de se*.

MURDERERS, or MURDERING-Pieces, are small pieces of ordnance, either of brass or iron, having chambers put in at their breeches.

They are mostly used at sea, at the bulk heads of the fore-castle, half-deck, &c. in order to clear the decks, when an enemy boards the ship.

MURTY, or MURTI, a word, among Hindoo metaphysicians, meaning a form, an apparition, image, or idol. It denotes any *shape* or *appearance* assumed by a celestial being. According to the Vedanta theory, (see *VEDANTA*), our vital souls are *murti*, or *images* merely of the Supreme Spirit. Homer describes the *idol* of Hercules in Elysium, with other deceased heroes, though the god himself was at the same time enjoying bliss in the heavenly mansions. The Hindoo theory, in like manner, would describe such a *murti*, as not susceptible of affecting with any sensation, either pleasing or painful, the being from which it emanated; though it may give pleasure or pain to collateral emanations from the same source. Hence they offer no sacrifices to the Supreme Essence, of which our souls are images or *murtis*, but adore him with silent meditation. (See *YAP*.) Oblations are made to fire, and acts of worship performed to the sun, the stars, the earth, and the powers of nature, which are considered as *murtis* or images, the same in kind as ourselves, but transcendently higher in degree. This difficult subject is discussed by Mr. Wilford, in vol. iii. of the *Asiatic Researches*. The Hindoo triad is called *Tri-murti*, (see that article,) literally *tri-form*.

[From the latter part of the article *JEJURY*, reference is made to *Murty*; but it is a mistake. *MURLY* is the word and article intended.]

MURU, in *Geography*, a sea-port town of Japan, in the island of Nippon; it has a narrow but safe harbour, screened by a mountain; 75 miles S.W. of Meaco.

MURUA, a town of Hindoostan, in Oude; 33 miles N. of Kairabad.

MURUCUIA, in *Botany*, according to Marcgrave, book 2, chapter 11, is the Brazilian name for ivy, and is therefore borrowed by him and others for certain climbing plants, better known under the denomination of *Passiflora*, or *Passion-flower*. From these however Tournefort, *Inst.* 241. t. 125, and Juss. 398, separate one species, on account of the inner crown of the nectary being tubular and undivided. This is *Passiflora Murucua* of Linnæus. See *PASSIFLORA*.

MURVIEDRO, in *Geography*. See *MORVIEDRO*.

MURVIEL, a town of France, in the department of the Hérault, and chief place of a canton, in the district of Beziers; 6 miles N.N.W. of it. The place contains 1550,

and the canton 6427 inhabitants, on a territory of 187½ kilometres, in 11 communes.

MURZAROLT, in *Falconry*. See *FALCON*.

MURZINEI, in *Geography*, a town of Russia, in the government of Tobolsk, on the Irtisch; 40 miles N.N.W. of Tara.

MUS, a town of the island of Sardinia; 5 miles W. of Cagliari.

Mus, in *Zoology*, a genus of quadrupeds of the class Mammalia, and order Glires. The generic character is, fore-teeth upper wedged; grinders three, rarely two, on each side the jaw; clavicles perfect. The whole genus is characterized as living in holes, or any concealed chinks, climbing and running swiftly; some of them swim. They seek their food by night, which is chiefly vegetable, and which they convey to the mouth by the fore-paws. The females have mostly eight teats, breed several times in the year, and bring forth numerous litters. Some of them migrate; their ears are short and rounded; the fore-feet are usually four-toed, with a warty excrescence instead of a fifth. There are forty-six species, divided into five families, *viz.* A, having the tail compressed at the end; B, tail round, naked; C, tail round, hairy; D, cheeks pouched; and E, earless, eyes small, tail short, or none, subterraneous. This numerous tribe constitutes a formidable phalanx, against which mankind find it necessary to employ various artifices of extirpation, in order to lessen the ravages occasionally suffered by its depredations. In our own island, the black and brown rats, the field and domestic mice, are the principal destroyers; but in other parts of Europe, as well as in the hotter regions of Asia, Africa, and America, many other species, still more formidable, are found.

#### A. Tail compressed at the End.

##### Species.

COYPUS; Beaver Rat. Tail middle length, sub-compressed, hairy; hind-feet palmate. It inhabits the waters of Chili. In appearance and colour it resembles the otter, but in its teeth it agrees with the rat tribe; it is easily tamed. The female produces five or six young at a birth.

ZIBETHICUS; Musk Rat. The tail of this species is long, compressed, lanceolate; feet cleft. It is found in the slow streams of North America, on the banks of which it builds, but more simply than the beaver. It feeds on shell-fish, in summer on fruits and herbs, in winter on roots, particularly on flags and water-lilies. The female has six teats, and brings from three to six young at a time, and three or four times in a year. It swims and dives dexterously, walks unsteadily, and is a foot long. About the anus of this rat are glands that secrete a musky oily fluid: hence it derives its trivial name.

#### B. Tail round, naked.

##### Species.

PILORIDES; Musk Cavy. Tail longish, scaly, truncate; body white. A variety of this species has its body tawny, beneath white. The first inhabits India; the second is found in the West India islands. It burrows, infests houses, smells of musk, is the size of a rabbit, and the tail is four inches long.

CARACO. Tail long, scaly, bluntish; body grey; hind-feet slightly palmate. It is found in the waters of Eastern Siberia and China; burrows on the banks, swims well, frequents houses, and is about six inches long. The head of this



this species is long and narrow; the eyes are nearer the ears than the nose; toes of the hind-feet connected by a fold of skin; the back is brown, mixed with grey; the tail about four inches and a half long.

\* **DECUMANUS**; Norway Rat. Tail very long, scaly, bristly, grey above, whitish beneath. This species inhabits India, Persia, and has been of late years imported into Europe. It burrows in the banks, swims well, migrates in vast armies, and does infinite mischief; frequents houses, stables, gutters, gardens, granaries; feeds on vegetables, and likewise on animal substances, and even on its own tribe. It is hunted by the dog, cat, and ferrets. The female breeds thrice in the year, and brings from twelve to eighteen young at a time. In the East Indies they burrow under the foundations of houses, and cause many to fall.

\* **RATTUS**; Black Rat. This species is supposed to have come originally from the East. Its tail is very long, scaly; its body is black, and beneath hoary. Its general length, from nose to tail, is about seven inches, and of the tail eight inches. The colour of the head and whole upper part of the body is a dark iron, or blackish-grey; the belly is of a dull ash colour; the legs are dusky, and very slightly covered with hair; the tail is nearly naked, coated with a scaly skin, and marked into numerous divisions or rings. Like the decumanus, it breeds frequently, and brings forth about seven or eight young at a time. Sometimes they increase so fast, as to overstock the place of their abode; and in this case, they fight and devour each other: on this account, these animals, after having been very troublesome, sometimes suddenly disappear. Various have been the methods adopted for the expulsion of rats from the places which they frequent: among these we shall notice that mentioned by Gesner, who says, if a rat be caught, and a bell be tied round its neck, and then set at liberty, it will drive away the rest. Its greatest natural enemy is the weasel, which pursues it into all its recesses, and destroys it. There is a variety much smaller, scarcely weighing an ounce. This is found about the deserts in the lower part of the Wolga.

\* **AMERICANUS**; American Rat. Tail long, scaly; head long; nose pointed; upper jaw much longer; ears large and naked. It is found in North America, among stones and clefts remote from habitations; sometimes larger than the rattus. The body is of a deep brown; the belly paler; the hair coarse.

\* **MUSCULUS**; Mouse. This species has a long tail, which is rather naked; fore-feet four-toed, hind-feet five-toed; thumb without a claw. It inhabits houses and granaries in Europe, Asia, and America; follows mankind; eats all kinds of provisions, drinks little; is gentle, timid, quick, and very prolific. It is devoured by rats, cats, weasels, owls, and hedge-hogs; is destroyed by elder and hellebore; is about three inches and a half long; varies much in colour, and is said to possess some trifling electrical properties, while alive.

\* **SILVATICUS**; Field Mouse. Tail long, scaly; body yellowish-brown, beneath white; breast yellow. A variety is entirely white; eyes are red. Inhabits Europe, in woods, fields, gardens, shrubberies, and in houses in the winter; feeds on corn and seeds, which it collects in large repositories; it gnaws through the hardest planks; is devoured in its turn by hawks, foxes, and weasels.

\* **MESSORIUS**; Harvest Mouse. Tail long, scaly; body rusty-brown, belly white, a straight line dividing the colours. This is found in many parts of England, chiefly in Hamp-

shire; is something smaller than the silvaticus; never enters houses, but is found in numerous fields during harvest, hence its trivial name; burrows deep in the ground, forms a bed of dry grass, is carried with the sheaves of corn into barns; the tail is a little hairy.

\* **AGRARIUS**; Rustic Mouse. Tail long, hairy; body yellowish; dorsal stripe black. This is found in Russia and Silesia, rarely in Germany; it is gregarious, and wanders about in large troops, doing great injury to the corn. There is a variety that has a dorsal stripe, mixed dusky and ferruginous; cheeks, between the ears, and sides orange; the under parts, legs, and feet pure white. It is found in New York.

\* **MINUTUS**; Minute Mouse. Tail long, scaly; body above ferruginous, beneath whitish. It inhabits Russia, and lives in corn-fields and in barns. It is not above half the size of the common mouse; the female is still smaller, less elegant; the face is dusky; mouth at the corners whitish. A variety, found in Siberia, is very beautiful; above elegantly yellow, beneath snowy.

\* **SORICINUS**; Shrew-like Mouse. The tail is of about the middle length, a little hairy; snout lengthened; ears round, hairy; above yellowish-grey, belly whitish. It is a native of Strasburg, where it was first discovered by professor Hermann. It has seven rows of whiskers; its claws are very short; tail yellowish, mixed with cinereous, more hairy beneath.

\* **VAGUS**; Wandering Mouse. Tail very long, nakedish; body cinereous; dorsal stripe black; ears plaited. It was first discovered by Dr. Pallas. It is found throughout the whole of the Tartarean desert, but particularly inhabits the rivers Oby and Ural; lives in the clefts of rocks, among stones, in hollow trees; feeds on seeds, and lesser animals; wanders in flocks, and sleeps in winter.

\* **BETULINUS**; Beech Mouse. Tail very long, nakedish; body tawny; dorsal stripe black; ears plaited. This, as its specific and trivial names import, inhabits beech woods, in the deserts of Ischim and Baraba, and near the Oby; lives solitary in the hollows of old trees, climbs easily, is very delicate, and soon growing torpid. In ascending the branches of trees, it coils round the twig with its tail, in the manner of an opossum. Dr. Pallas informs us, that he has often observed it ascending the stems of some strong grasses, which were scarcely bent by its weight. He also kept several of them a considerable time, which grew tame, and delighted in being held in the hand.

\* **PUMILIO**; Dwarf Mouse. Tail middle length, and rather naked; body of a dark ash colour; forehead naked, black; four dorsal lines black. It inhabits the forests east of the Cape of Good Hope. This is one of the least of the genus, being little more than two inches long from nose to tail. It was first described by Sparrman.

\* **STRIATUS**; Oriental Mouse. Tail longish and nakedish; the body has twelve rows of parallel white spots. It inhabits India, and is only half the size of the common mouse. The body is dusky, but whitish beneath; tail is of the same length as the body; the ears are short, round, naked.

\* **BARBARUS**; Barbary Mouse. Tail middle length; body brown, with ten pale stripes; three toes before, and four behind. It is a native of Barbary; is less than the common mouse; the tail is naked, annulate, the length of the body.

\* **MEXICANUS**; Mexican Mouse. A large reddish spot on each side the belly. It inhabits, as its name denotes, Mexico; and its colour is whitish, mixed with red.

C. Tail



## C. Tail round, hairy.

## Species.

**VIRGINIANUS**; Virginian Moufe. Tail entirely hairy, thick at the bafe, long, tapering. Inhabits North America, and lives in corn-fields and paltures. The body is white; nofe black pointed; ears sharp; limbs flender.

**SAXATILIS**; Rock Moufe. Tail longifh; ears longer than the fur; fore-feet three-toed, with the appearance of a fourth. It is found in Siberia, in the clefts of rocks, and feeds chiefly on the feeds of the aftragalus.

**CYANUS**; Blue Moufe. Tail of the middle length, rather hairy; the fore-feet have four toes, and the hind-feet five; the body is blue, but the under part is whitifh. It inhabits Chili. In fize and appearance it refembles the field moufe; is very timid, forms large burrows divided into many chambers, collects vait ftores of bulbous roots, which the natives fearch carefully after.

**AMPHIBIUS**; Water Rat. Tail middle length; ears hardly above the fur; the feet are three-toed, with the appearance of a fourth. There are four other varieties: 1. Tail a little hairy; fore-feet three-toed, with the appearance of a fourth; hind-feet five-toed; ears fhorter than fur. 2. Black; in ftructure refembles the laft. 3. Uniformly blackifh. 4. Back with a large white fpot; on the breaft a white line. Inhabits Europe, Northern Afta, and Northern America. It frequents rivers and flagnant waters, and forms its burrows in the banks. It is of a thicker and fhorter form than many others of this genus, and has fomewhat of the fhape of a beaver. The water rat is about feven inches long, and its tail about five. Its colour varies much with the climate in which it is fituated, being fometimes nearly black, and fometimes paler than ufual. It alfo varies in fize, and the varieties above defcribed have been miftakenly confidered as diftinct fpecies. It never frequents houfes, but confines its haunts to the banks of rivers, and is fupposed to live on fifh, frogs, &c. and probably on various roots, and other vegetable fubftances. The flefh of this fpecies has fometimes been eaten. The female is fmaller and of a lighter colour than the male; fhe has eight teats, four pectoral and four abdominal, and brings eight young at a time.

**ALLIARIUS**; Garlic Moufe. Tail fhort; ears largifh, and a little hairy; body cinereous, beneath whitifh. It inhabits Siberia; feeds on the roots of garlic, which it hoards up in large quantities.

**RUTILUS**; Red Moufe. Tail fhort; ears longer than the fur; fore-feet three-toed, with the rudiments of a fourth; body above reddifh, beneath whitifh. It alfo inhabits Siberia; lives in holes and hollow trees, in winter in fheaves of corn, in granaries, and in houfes. It feeds on grain, flefh, and roots; runs all the winter among fnow, and is about three inches and a half long. The feet are hairy, white; tail above yellowifh, with a brown ftripe, beneath white; fcarcely an inch in length; its face is brittle.

**GREGALIS**; Gregarious Moufe. Tail fhort; ears longer than the fur; fore-feet three-toed, with the rudiments of a fourth; the body greyifh. It inhabits the eaftern parts of Siberia; burrows in dry fields, with many holes leading to chambers, where are depofited ftores of roots, chiefly of the garlic and the lily.

**ECONOMUS**; Economic Moufe. Tail fhort; ears fhorter than the fur; fore-feet three-toed, with the rudiments of a fourth; the body is brown. It inhabits Siberia, efpecially its eaftern parts, and Kamtschatka, in vait numbers. It is faid to have been found in the arctic circle. This fpecies

was named *economic mice*, from their very curious mode of living. They inhabit damp foils, and fhun the fandy, and form burrows with many chambers and entrances. In thefe chambers they lay up ftores of provifions, collected with great pains in fummer, from various plants, which they bring out of their holes in hot funny weather, that they may the more effectually dry and preferve them. In certain years, they make confiderable migrations out of Kamtschatka: they collect in the fpring, and go off in incredible multitudes. They proceed in a direct course, and fuffer nothing to impede their course, not even rivers and the arms of the fea. Many of them, in their paffage acrofs the water, fall a prey to the fifh, but on land they are fafe; for the inhabitants of Kamtschatka have a fuperftitious veneration for them, and are fo far from hurting them, that if they find any of them lying in the road, exhausted through fatigue and hunger, they afford them every affiftance in their power. On their return from their migration, expreffes are fent to all quarters of the country with the joyful tidings, becaufe their arrival is confidered as a fure prognoftic of a fuccefsful chafe and fifhery; and they are faid to lament their departure, which is ufually fucceeded by tempeftuous and rainy weather.

**LANIGER**; Woolly Moufe. Tail of the middle length; fore-feet four-toed, hind five-toed, body cinereous, woolly. Inhabits the northern parts of Chili; it burrows, is cleanly, docile, tame; feeds on bulbous roots, chiefly onions; female brings forth young twice in the year, and five or fix at a time. The ears are fmall, acute; fnout long; the hair is long and foft, and was formerly ufed by the Peruvians inftead of the fineft wool.

\* **ARVALIS**; Meadow Moufe. This fpecies has a large head; a blunt nofe; fhort ears hidden in its fur; prominent eyes and a fhort tail; the head and body are ferruginous, mixed with black; the belly is of a deep afh-colour; feet dufky; it is fix inches long. It is an European moufe, and is found in great abundance in Newfoundland, where it does much mifchief in the gardens. In this country it makes its neft in moift meadows; brings forth feveral young at a time, and feveral times in the year. It refides under ground, and lives on nuts, acorns, and corn.

**SOCIALIS**; Social Moufe. Tail fhort, ears round, and very fhort; fore-feet three-toed, with the rudiments of the fourth; body pale, beneath it is white; inhabits the fandy deferts between the Wolga and the Ural rivers, in families of male and female with their offspring; feeds much on tulip and other bulbous roots; is the prey of crows, otters, and weefels, and is a little more than three inches long.

**LAGURUS**; Hare-tailed Moufe. Tail fhorter even than the fur; the fore-feet three-toed, with the rudiments of a fourth; body cinereous, with a longitudinal black line. This fpecies is found in the fandy and muddy deferts on the Ural and Irtifch, each moufe in a round burrow; it migrates in great fwarms; feeds chiefly on the dwarf iris, and on the fmaller fpecies of mice; it is flow in its motions, fleeps much when it rolls itfelf up, but it is not torpid in the winter; brings forth feveral times in the year, and five or fix at a time. It is a very fierce animal.

**TORQUATUS**; Collared Moufe. Tail fhort; ears fhorter than the fur; fore-feet five-toed, body rufty, variegated; round the neck a whitifh collar; a dark line along the back. It inhabits the Uralian mountains, and marfhes of the Frozen fea; feeds on lichens and bulbous roots, which it hoards in its burrows; it migrates in troops, and is three inches long.

**LEMMUS**; Lemming. Tail fhort; ears fhorter than the fur;



fur; fore-feet five-toed; body tawny varied with black, beneath white; whiskers long, six hairs on each side longer than the rest, upper lip divided; ears small, round, reflected, belly white, tinged with yellow; there is a variety smaller, and more uniformly tawny. It inhabits Siberia; burrows in the ground; lays up stores of provisions for the winter: this variety does not migrate; but the migrations of the other variety have long rendered it celebrated in the annals of natural history. The lemming differs in size and colour according to the regions which it inhabits, those which are found in Norway being almost as large as water rats, while those of Lapland and Siberia are not much larger than the field mouse. The colour of the Norway kind is an elegant variegation of black and tawny on the upper parts, disposed in patches and clouded markings; the sides of the head and under parts of the body being white; the legs and tail greyish. In the Lapland kind the colour is chiefly a tawny-brown above, with indistinct dusky variegations, and beneath of a dull white, the claws are smaller than those of the Norwegian animal. The natural residence of the lemming is in the mountainous parts of Lapland and Norway, from which tracts, at particular but uncertain periods, it descends into the plain below, in the manner and with the effect described under the article *MOUSE, Sable*. In their usual mode of life they are not observed to be of a social disposition, but to reside in a scattered manner, in holes beneath the surface, without laying up any regular provision, like some other animals of this genus. They are said to breed several times in the year, and to produce five or six at a time.

**HUDSONIUS;** Hudson's Mouse. Tail short; no ears; hind-feet five-toed; dorsal stripe brownish-yellow; breast and belly yellow. It inhabits Labrador, and is about five inches long. The body is chiefly cinereous, a pale tawny stripe along the sides; tail terminated with long stiff dirty-white hairs; the feet are short.

**LENAE;** Lena Mouse. Tail short, covered with coarse hair; toes four before and five behind, the body is white. Inhabits the banks of the river Lena, whence it derives its name, and is about three inches long.

#### D. *Cheeks pouched.*

##### Species.

**ACREDULA;** Siberian Hamster. Ears plaited; body grey, beneath whitish. It is found in Siberia, near the river Ural. It is about four inches long; lives in burrows, seeks food by night. Snout thick, upper lip deeply divided; the upper fore-teeth are yellow, convex, truncate; the lower are sharp; the tail is short, round; brown above, white beneath; it is only an inch long, and its legs are white.

**CRICETUS;** German Hamster. Body beneath deep black; the sides have each three white spots. A variety of this is entirely black, except the tip of the nose, edges of the ears, and feet, which are white. Of the pouched rats, this is the most remarkable, and the only European species provided with those peculiar receptacles, which are situated on each side the mouth, and when empty, so far contracted as not to appear, but when filled resemble a pair of tumid bladders, having a smooth veiny surface, concealed, however, under the fur or skin of the cheeks, which bulge out extremely in this state. The hamster inhabits Siberia, and the south of Russia; it is also found in Poland, as well as in many parts of Germany. They are very destructive in some districts, devouring great quantities of grain, which they carry off in their pouches, and deposit in their holes, in order

to devour during the autumn. Their habitations, which they dig to the depth of three or four feet, consist of more or fewer apartments, according to the age of the animal; a young hamster makes them scarcely a foot deep, and the old sinks them to the depth of four or five feet, and the whole diameter of the residence, taking in all its habitations, is sometimes eight or ten feet. The principal chamber is lined with dried grass, and serves for a lodging; the others are destined for the preservation of provisions, of which the animal amasses a great quantity in the autumn. Each hole has two apertures, the one descending obliquely, the other ascending in a perpendicular direction, and it is through the latter that the animal goes in and out. The hamster feeds on all kinds of grain, herbs, and roots, and when driven to it, on smaller animals. In harvest time, we are told, it makes excursions for provisions, and carries every article it can find into its granary. To facilitate the transportation of his food, nature has provided him, as we have seen, with pouches on the outside: these are membranous, smooth, and shining, and in the inside are many glands, which continually secrete a fluid, that preserves their flexibility, and enables them to resist or to heal any accidents that the roughness or sharpness of the grain might occasion. On the approach of winter, the hamster retires into his subterraneous abode, the entry of which he shuts with great care, and thus remaining in a state of tranquillity, feeds on his collected provision, till the frost becomes severe, at which period he falls into a profound slumber, that grows into a complete torpidity, so that the animal continues rolled up with all its limbs inflexible; its body is perfectly cold, and without the least appearance of life. Anatomists have examined it in this state; have opened it, and found the heart alternately contracting and dilating, but with a motion so exceedingly slow, as to be scarcely perceptible; though in the waking state of the animal it beats 150 pulsations in the same time. In this state the fat of the animal has the appearance of being coagulated, its intestines cannot be excited by the application of the strongest stimulants; and the electric shock may be passed through it without effect. The waking of the hamster is a gradual operation; he first loses the rigidity of his limbs, then makes profound inspirations, at long intervals; after this he begins to move his limbs, and utters a sort of unpleasant rattling sound. After continuing these operations some time, he at length opens his eyes, and endeavours to rise, but reels about some time, as if in a state of intoxication, till at length, after resting a small space, he perfectly recovers his usual powers. There seems to be no sort of society existing among the hamsters. They are naturally fierce, and make a desperate defence when attacked; they also pursue and destroy every animal which they are capable of conquering, not excepting even the weaker individuals of their own species. It is recorded by M. Sultz, that they abound to such a degree in Gotha, that in a single year, more than 80,000 of their skins were delivered in the Hotel de Ville of that capital, upon which a premium was paid, on account of the enormous devastations which these animals commit among the corn.

**ARENARIUS;** Sand Rat. Body above cinereous, beneath, on the sides and limbs snowy. It inhabits Barbary; is characterized as fierce and untameable; it burrows, and feeds, by night, on leguminous plants and seeds. The head of this animal is large; the snout long; whiskers longer than the head; the fore-feet are four-toed; the hair soft; and the creature about  $3\frac{1}{2}$  inches long.

**PHŒUS;** Zaryzn Rat. Body and tail dark cinereous; beneath white. It inhabits the deserts of Siberia, and the mountains of Persia; it devours fields of rice, does not become



come torpid, and is about  $3\frac{1}{2}$  inches long! This, by Shaw and other naturalists, is denominated the Astracan mouse, on account of its abode, Zaryzin, which is near Astracan; it is occasionally taken in the winter season about stables and other out-houses. It is also found about the Persian villages in the Hyrcanian mountains, and was first distinctly described by Dr. Pallas.

**SONGARUS**; Songar Rat. Back cinereous, with a longitudinal black line, sides variegated white and brown; belly white. It inhabits the sandy deserts of Siberia, burrows and forms repositories for grain, is easily tamed, and is three inches long. The tail is thick, blunt, and hairy; the whiskers shorter than the head, ears longer; the feet are white.

**FURUNCULUS**; Barbara Rat. Body grey above; dorsal stripe black; beneath whitish. It inhabits the deserts of Barbara, near the rivers Ob and Dauria; is three inches long. It is of a yellowish-grey colour above, and white beneath. It feeds on farinaceous seeds.

**E.** No Ears; the Eyes very small; Tail short, or perhaps none; subterraneous.

#### Species.

**TALPINUS**; Talpine Mole-rat. The body of this species is brown, tail short; fore-teeth wedged; no ears; fore-feet five-toed, formed for digging. There is a variety entirely black. It inhabits the turfy plains of Russia; forms chambers under the sod, in which it deposits various bulbous roots; is not torpid in winter; sight weak in the day; brings three or four young at a time, and is about  $3\frac{1}{2}$  inches long. The nose is truncate; the eyes hidden in the fur; chin white; belly and limbs whitish. In the winter it sometimes makes its nest beneath a hay-rick, at a considerable distance below the ground.

**CAPENSIS**; Cape Mole-rat. Tail very short; fore-feet wedged; no ears; fore-feet five-toed, mouth white. The head is rounded; hair longish, brown, tipped with yellow; orbits and nape of the neck white; ears with a longitudinal white spot; inner toe short, the two next long, fourth shorter, outer very short; five inches and a half long. This, as its name imports, is an inhabitant of the Cape of Good Hope; it is exceedingly destructive to gardens, flinging up hillocks, and eating various kinds of roots.

**MARITIMUS**; African Mole-rat. The tail of this species of rat is short; upper fore-teeth furrowed; it has no ears; the feet are five-toed; body above whitish, mixed with yellowish, sides and belly grey-white. The head is large, the nose is black, flattened, and wrinkled at the end; lower fore-teeth long, and it has the power of separating these at pleasure, after the manner of a kangaroo. This large species is a native of the Cape of Good Hope, and is there known by the name of the sand mole, being chiefly found in the neighbourhood of the shores, and never in the interior parts of the country. It makes the ground, in the places it inhabits, so hollow, by flinging up the earth, in forming its burrows, as to be highly inconvenient to travellers; breaking every six or eight minutes under the horse's feet, and letting them up to their shoulders. It feeds on bulbous roots, runs very slowly, digs its chambers with great rapidity, bites extremely hard, is very good eating, and is about a foot long.

**ASPALAX**; Daurian Mole-rat. Tail short; fore-teeth wedged; no ears; claws of the fore-feet long. This species, in form and manner of life, agrees with the *Mus typhlus*, which will be next noticed, but is in general smaller, and of a yellowish ash-colour; the head is flat and blunt, the body short and somewhat depressed, the limbs very strong, espe-

cially the fore-legs; the feet of which are large, naked, and well adapted for burrowing in the ground. It is a native of the Altaic mountains, and of the country beyond lake Baikal; it differs considerably in size in different regions; those of the Altaic mountains sometimes measuring nearly nine inches in length.

**TYPHLUS**; the Blind Rat. This species has no tail; fore-feet five-toed; fore-teeth broad; and without eyes or external ears. This is one of the largest and most remarkable of the whole tribe, being, as we have observed, entirely destitute of eyes and tail; the defect of the former is thought to be a very singular circumstance, and the animal perhaps affords the only instance of a truly blind or eyeless quadruped. In the mole, the eyes are small and deeply seated, they are nevertheless perfect in their kind, though not at all calculated for acute vision, but they are enough to enable the animal to avoid the danger of exposure; but in the blind rat, there is merely a pair of sub-cutaneous rudiments of eyes, smaller than poppy-seeds, and covered with a real skin. It inhabits southern Russia; each animal forming a long burrow under the turf; it feeds on bulbous roots; when irritated it gnashes its teeth and bites very hard; in lieu of eyes, the senses of smell, touch, and hearing are very acute.

*Mus Alpinus*, a name given by many authors to the mountain-rat, more commonly known by the name of the marmotte.

*Mus Araneus*. See SHREW.

*Mus Marinus*. See APHRODITA.

*Mus Norvegicus*, in Zoology, the name given by authors to the Norway rat, commonly called the lemming. See Sable MOUSE, and MUS.

*Mus Pharaonis*, Pharaoh's rat, a name given by the people of Egypt to the ichneumon, a creature of the weasel kind, which they are very fond of for its destroying serpents, and kept tame about their houses, as we do cats.

*Mus Terra*, in Botany, a name given by some authors to the roots of the *bulbocastanum*, or earth-nut; it was probably at first *muris terra radix*, the earth-mouse's root, and so called from the earth-mice or field-mice being very fond of them; but the word *radix* being left out, it stands only *mus terra*.

*Mus Tag*, in Geography, a mountain of Tartary, which, in Strahlenberg's map, runs parallel to the Belur on the E. See BELUR.

**MUSA**, in Botany, the Banana, or Plantain-tree. The word is corrupted, or rather refined, from *Mauz*, the Egyptian appellation of this valuable plant, and is made classical in the works of Linnæus, by an allusion to *Musa*, a muse; or, with much greater propriety, to *Antonius Musa*, the physician of Augustus, who having written on some botanical subjects, may justly be commemorated in the above name. Linn. Mus. Cliff. 6. Gen. 538. Schreb. 714. Ait. Hort. Kew, ed. 1. v. 3. 421. Juss. 61. Plum. Gen. t. 34. Lamarck Illustr. t. 836, 837. Gærtn. t. 11. f. 1.—Class and order, *Polygamia Monoecia*, or rather *Hexandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Muse*, Juss.

Gen. Ch. *Cal.* a number of partial sheaths, on a simple common stalk, each ovate-oblong, rather concave, large, alternate, containing many flowers. Perianth none. *Cor.* superior, unequal, ringent, the petal constituting the upper lip; the nectary the lower. Petal erect, ligulate, abrupt, five-toothed, its two sides meeting at the base. Nectary of one leaf, heart-shaped, boat-like, compressed, pointed, shorter than the petal, and inserted within its base, spreading outwards. *Stam.* Filaments six, awl-shaped, five  
of



of them within the petal, erect, the sixth within the nectary, reclining; anthers linear, longitudinally attached from the middle of the filament to its summit, some of them, in one flower or another, imperfect. *Pist.* Germen inferior, very large, bluntly triangular; style cylindrical, erect, the length of the petal; stigma capitate, roundish, with six slight notches. *Peric.* Berry pulpy, with a coriaceous coat, with three or six slight angles, gibbous at one side, of one cell, spongy or hollow in the centre. *Seeds* numerous, imbedded in the pulp, roundish, roughish, excavated at the base.

*Obf.* The flowers about the lower part of the common stalk or receptacle, have usually five of the anthers abortive, or altogether wanting, that of the sixth stamen only, which accompanies the nectary, being perfect; while in most of the upper flowers the reverse is the case, five of their stamens being perfect, and the sixth incomplete; their pistil also is smaller in all its parts, and abortive. These therefore are, in effect, a sort of male flowers, and the former female. Such being the case, this genus has scarcely the proper characters of the class *Polygamia*, but rather those of *Monoecia*. Considering the partial and variable imperfection of the organs, still as they are both present in all the flowers, *Musa* ought rather perhaps to be referred to *Hexandria*. In natural affinity it is nearer the *Scitamineæ* than any other order, the chief difference being, as Jussieu observes, in their stamens.

*Ess. Ch.* Calyx a many-flowered sheath, of one leaf, Petal one, ligulate, five-toothed. Nectary of one leaf, opposite to the petal. Berry inferior, with many seeds. Most of the stamens abortive in some flowers, pistil in the others.

1. *M. paradisiaca*. Plantain Tree. Linn. Sp. Pl. 1477, (*M. caudice viridi, fructu longiore falcato anguloso*; Trew. Ehret. 3. t. 18, 19, 20. *Musa*; Rumph. Amb. v. 5. book 8. 125. t. 60. Ger. em. 1515. Bala; Rheede Malab. v. 1. 17. t. 12, 13, 14.)—Flower-stalk drooping. Male flowers permanent. Fruit oblong.—Native of the East Indies. Cultivated every where within the tropics, for the sake of its fruit, which makes a principal part of the vegetable food of the inhabitants, and is almost infinitely variable in quality, like our apples. Notwithstanding its size, which is that of a moderate tree, this can be considered only as an herbaceous plant. The root is perennial. *Stems* erect, unbranched, 12 feet or more in height, 10 or 12 inches in diameter, round, smooth, spongy, and succulent, flowering but once, which, in hot countries, usually happens the second year, after which it dies down to the root. In our stoves it will often remain many years without flowering, but after that event, the stem always dies. *Leaves* numerous, about the top of the stem, oblong, entire, several feet long and one broad, with a strong midrib, and innumerable transverse parallel veins; they are quite smooth, easily torn, rather glaucous and opaque. *Flower-stalk* terminal, solitary, bent almost perpendicularly downward, several feet long, bearing numerous alternate tufts of flowers, each accompanied by a fine purple deciduous sheath. The petal is often striped with red. *Fruit* eight or nine inches long,  $1\frac{1}{2}$  thick, green, with a sweet, mealy, pale-orange pulp. Such at least Ehret describes, and such we have seen ripened at Sion house, under the care of Mr. Hoy. No seeds are found in the cultivated plant.

2. *M. sapientum*. Banana Tree. Linn. Sp. Pl. 1477. (*M. caudice maculato, fructu recto rotundo brevior odore*; Trew. Ehret. 4. t. 21, 22, 23.)—Flower-stalk drooping. Male flowers deciduous. Fruit ovate. This is now usually considered as a variety of the former, the characters

on which its supposed specific difference was founded, being to all appearance accidental. The stem is spotted.

The fruit of this, as well as of the former, roasted before it is quite ripe, is used as bread.

3. *M. troglodytarum*. Wild Plantain Tree. Linn. Sp. Pl. 1478. (*M. uranoscopos*; Rumph. Amb. v. 5. book 8. 137. t. 61. f. 2.)—Flower-stalk erect.—Native of the Molucca islands. This seems to be the true wild state of one or both the former. Rumphius says, the fruit can be eaten when roasted only, being rather acrid when raw, and that it contains abundance of seeds. We apprehend some mistake in Gærtner respecting this being a *Heliconia*; see his v. 1. 30.

4. *M. coccinea*. Scarlet Plantain Tree. Andr. Repos. t. 47. Redout. Liliac. t. 307, 308.—Flowers capitate, erect. Sheaths ovate, permanent. Stamens five.—Native of China. Said to have been first introduced into the British stoves by T. Evans, esq. of Stepney, about the year 1792. This is of much more humble growth than any of the foregoing, and remarkable for the rich scarlet colour of its sheaths, which are imbricated and permanent, forming a cone-like head. The lowermost of them often ends in a leaf. Redoutè very justly observes, that these scales ought to be called *bractææ*, and not to be considered as a *calyx*. This author, as well as Mr. Andrews, describes five stamens only in each flower, all alike perfect in some, abortive in others.

For *MUSA BIHAI* of Linnæus, see *HELICONIA*.

*MUSA*, in Gardening, comprehends plants of the perennial kind for the hot-house, of which the species cultivated are; the plantain tree (*M. paradisiaca*); and the banana tree (*M. sapientum*).

Of the second sort a very excellent drink is made from the juice of the ripe fruit fermented, resembling the best Southam cyder.

Each of these species has several varieties.

And it is observed by Brown, that "these two fruits are among the greatest blessings bestowed by Providence upon the inhabitants of hot climates." As "three dozen plantains are sufficient to serve one man for a week instead of bread, and will support him much better."

*Method of Culture*.—These plants may be increased by planting the young suckers of the roots of such plants as have fruited, taken off carefully with root-fibres, in large pots filled with light rich earth, and plunged in the tan-bed of the stove, in the summer season. They afterwards require to have water given pretty plentifully in the hot summer months, but more sparingly in the winter, and in less proportions at a time. They succeed best in about the same degrees of heat as the pine apple. The pots should be increased in size as they advance in growth.

But the best way to have their fruit well in this climate is to shake them out of the pots, after they have become fully established, with the balls of earth about their roots, and plant them in the tan-bed in the stove, old tan being laid round their root-fibres to strike into. When new tan is added, care should be taken not to disturb their roots, and always to leave plenty of old tan about them, to guard against too much heat. They should have water twice a week in winter, about two quarts each plant at a time, and in summer twice as much at a time, and every other day. The signs of perfecting their fruit, are their pushing out their flower-stems in the spring. The stoves should be sufficiently high for this purpose, as twenty feet or more.

In their native country, these trees thrive best where the soil is rich, cool and moist. Their fruiting in the South



Sea islands is said to be promoted by the use of lime and wood-ashes.

These plants are mostly cultivated here by way of curiosity and for variety.

MUSA, in *Geography*, a town of Arabia, in Yemen, which is a kind of market for fruit and fowls to Mocha. The town is populous, and surrounded with walls; 18 miles E. of Mocha.

MUSA, a river of Saxony, which runs into the Elbe, near Meissen.

MUSACCHIA, a town of European Turkey, in Albania; 36 miles S.S.E. of Albafano.

MUSÆ, in *Botany*, the first natural order of the fourth class in Jussieu's system. The character of that class is to have the seed monocotyledonous, and the stamens inserted upon the germen. The latter are definite in number. Germen (of course) inferior; styles either solitary, or wanting, rarely numerous; stigma simple or divided. Fruit of one cell or many, pulpy or capsular.

The *Musæ* are thus defined. *Calyx* (corolla of Linnæus), superior, deeply divided into two parts, which are either simple or lobed. *Stamens* six, standing on the germen; some of them occasionally barren or abortive. *Germen* inferior; style simple; stigma simple or divided. *Fruit* of three cells, with one or many seeds in each. *Corculum* in the cavity of the farinaceous albumen.

*Stem* herbaceous or arboresecent, often clothed with the sheathing bases of the *footstalks*. *Leaves* alternate, sheathing, convolute when young, furnished with a simple longitudinal rib, which sends off innumerable transverse, or obliquely parallel veins. *Flowers* accompanied by *sheaths*, and disposed in alternate tufts, along a *stalk* originating from the centre among the leaves.

This order consists of *Musa*, from which its name is taken; *Heliconia*; *Strelitzia*; and *Ravenala* of Adanson, which is *Urania* of Schreber. It differs from the *Scitamineæ*, (Jussieu's *Cannæ*), chiefly in having six stamens, instead of one stamen with the rudiments of two others, which last are pointed out by Mr. Brown, Prodr. Nov. Holl. v. 1. 305. See SCITAMINEÆ.

MUSÆUS, in *Biography*, is more celebrated by ancient writers as a philosopher, astronomer, epic poet, and priest of Ceres, than as a musician; however, he lived in so remote a period, and has so far survived his contemporaries, that he is one of the few melancholy remains of his age, of which posterity has cherished the memory; he therefore cannot, without injustice, be omitted: for whoever looks into the ingenious and well-digested biographical chart of Dr. Priestley, will find Linus, Orpheus, and Musæus, placed in such barren regions of history, that, like the once beautiful cities of Palmyra and Balbec, they now stand in a desert; but great and exalted characters are buoyed up by time, and resist the stream of oblivion, which soon sweeps away all such as have not eminently distinguished themselves.

Musæus, according to Plato and Diodorus Siculus, was an Athenian, the son of Orpheus, and chief of the Eleusinian mysteries, instituted at Athens in honour of Ceres; or, according to others, he was only the disciple of Orpheus; but from the great resemblance which there was between his character and talents, and those of his master, by giving a stronger outline to the figure, he was called his son, as those were styled the children of Apollo, who cultivated the arts, of which he was the titular god.

Musæus is allowed to have been one of the first poets, who versified the oracles. He is placed in the Arundelian

marbles, Epoch 15, 1426. B.C. at which time his hymns are there said to have been received in the celebration of the Eleusinian mysteries. Laertius tells us, that Musæus not only composed a theogony, but formed a sphere for the use of his companions; yet, as this honour is generally given to Chiron, it is more natural to suppose, with sir Isaac Newton, that he enlarged it with the addition of several constellations after the conquest of the Golden Fleece. The sphere itself shews that it was delineated after the Argonautic expedition, which is described in the asterisms, together with several other more ancient histories of the Greeks, and without any thing later: for the ship Argo was the first long vessel which they had built: hitherto they had used round ships of burthen, and kept within sight of the shore; but now, by the dictates of the oracle, and consent of the princes of Greece, the flower of that country sail rapidly through the deep, and guide their ship by the stars.

Musæus is celebrated by Virgil in the character of Hierophant, or priest of Ceres, among the most illustrious mortals who have merited a place in Elysium. Here he is made the conductor of Æneas to the recess, where he meets the shade of his father, Anchises.

A hill near the citadel of Athens was called Musæum, according to Pausanias, from Musæus, who used to retire thither to meditate, and compose his religious hymns, and at which place he was afterwards buried. The works, which went under his name, like those of Orpheus, were by many attributed to Onomacritus. Nothing remains of this poet now, nor were any of his writings extant in the time of Pausanias, except a hymn to Ceres, which he made for the Lycomedes. And as these hymns were likewise set to music, and sung in the mysteries by Musæus himself, in the character of a priest, he thence perhaps acquired from future times the title of musician, as well as of poet, the performance of sacred music being, probably, at first confined to the priesthood in these celebrations, as it had been before in Egypt, whence they originated. However, he is not enumerated among ancient musicians by Plutarch; nor does it appear that he merited the title of son and successor to Orpheus for his musical abilities, so much as for his poetry, piety, and profound knowledge in religious mysteries. But notwithstanding the numberless testimonies come down to us from the best and most ancient writers of Greece and Rome, concerning Linus, Orpheus, and Musæus, Vossius, in the true spirit of system and licentiousness of an etymologist, as well as from an ambition of being thought deeply versed in the Eastern languages, particularly the Phœnician, pretends to resolve those names, which have been known and revered by all antiquity, into words signifying *things*, not *persons*: as Linos, a *song*; Mosa, *art, discipline*; Orpheo, *science*. But if this fancy were generally practised upon ancient authors, there would be little chance of one among them escaping annihilation.

MUSÆUS, another of the same name, called the Grammarian, author of a Greek poem on "The Loves of Hero and Leander," is supposed to have lived as late as the fourth century, since he is not referred to by any of the older scholiasts, and some of his verses appear borrowed from the Dionysiacs of Nonnius. Nothing is known of him personally, yet his work is in a pure and elegant style, with much delicacy of sentiment. It has been frequently reprinted, both in collections and separately.

MUSAGATTA, in *Geography*, a town of Portugal, in the province of Beira; nine miles S.S.W. of Torre de Moncorvo.

MUSAGETES, in *Mythology*, the appellation of Apollo,



Apollo, as the conductor of the Muses. The same name was also given to Hercules.

MUSALI, in *Hindoo Mythology*, a name of one of the Ramas. (See RAMA.) The word musali is derived from the large wooden pestle used for separating rice from the husk. This pestle is called *musal*, and in images and sculptures is seen in the hand of Bala Rama, indicating that, as well as a warrior, he was also a benefactor to mankind. In his hand a plough is also sometimes seen, and one of his names, Halayudha, or *plough-armed*, is thence derived; also Haladhara, or the *plough-bearer*: more correctly, perhaps, Haladhara, like Gangadhara, or Maridhara, as mentioned in the article MURLY.

MUSANO, in *Geography*, a town of Italy, in the Trevisan; five miles W.N.W. of Treviso.

MUSART, or MASSURT, a snowy ridge of mountains, which passes south in Asiatic Russia from Bogdo Alim, and is supposed to join the mountains of Thibet. This may possibly be the Alak, (Alak Ula, or Alak Tag,) which joins the Belur Tag. It is said to give rise to the rivers Sirr or Sihon, and the Talas.

MUSAY, a town of Hungary; 10 miles from Munkacs.

MUSCA, the Fly, in *Entomology*, a genus of insects of the order Diptera, of which the generic character is as follows: mouth with a soft exerted fleshy proboscis, and two equal lips; sucker furnished with bristles; feelers two, but very short, and sometimes none at all; antennæ generally short. About 550 species are described by Gmelin: these are divided into two families, *viz.* A, with two short feelers; and B, without any feelers. The latter, however, includes only eleven species of the vast number already mentioned. These grand sections are again separated into still smaller divisions. Thus the family A is divided into six sections, and that of B into two.

The vast extent of this genus, according to Dr. Shaw, makes it necessary to divide the whole into different assortments, in order to the more ready investigation of the properties of the species. These divisions, (which answer to Gmelin's subdivisions,) are instituted from the form of the antennæ, which are either simple, without any lateral hair or plume; or armed, that is, furnished with a lateral hair or plume. The subdivisions, or sections, are still farther divided, as we shall see in the enumeration of the species, into others, according to the more or less downy or hairy appearance of the insects.

Although the number of known species in this genus is so very large, yet it is probable it bears no sort of proportion to the number that is still unknown, or that, at present, has not been arranged under specific characters. Mr. Harris, in his *English Entomology*, has described a greater number of species than Linnaeus enumerated as existing in the world; but England is not the country that is likely to be most productive of this insect. The southern countries of Europe afford a much greater variety of species than those that are more north: in hot climates, in general, they are always numerous, and, in a multitude of instances, they multiply to a degree that is almost intolerable. The different species are extremely diversified in their external form, their structure, their organization, their metamorphosis, their manner of propagating their young, and in providing for their posterity. A full explanation of these different parts of their economy would require a large volume, which is incompatible with the limits prescribed to our work.

Some of these insects have trunks instead of a mouth; others have that organ armed with teeth; and many have

a mouth and a trunk. The proboscis of flies is a machine contrived for extracting the blood from the vessels of large animals, and the nectar from the petals of flowers; and the science of hydraulics has not enabled men to construct machines more exactly arranged, or better adapted to these purposes. Some of them possess considerable firmness and solidity, those especially that are destined to pierce the skins of cattle. In order to see them at work, expose a syrup to attract them, and then take a lens for the inspection.

Each eye of the fly contains in it an assemblage of a vast number of small ones, which has, perhaps, the effect of multiplying the surrounding objects, and creating representations of them, which the experience of the insect corrects. From the eye, if we pass on and survey the body, we find it provided with the organs of respiration. Four stigmata, for this purpose, are found upon the thorax, and a greater number dispersed over the annuli of the abdomen. The coverings of the different parts of the abdomen are scaly, and do not consist of one piece, but admit of the contraction and dilatation of that part, according to the circumstances of the animal. Each of the feet terminates in a small bunch of hairs resembling a brush.

The interior organization of this genus, when examined with a proper apparatus, presents two pulmonary sacs of a white colour, arranged longitudinally along the body. The action of the heart may also be discerned, as well as the liquor it contains, continually driven along the great artery leading to it, and returning by the same course. During their larva state, flies go through a greater variety of metamorphoses than even the silk or butterfly-worms: in their progress from the vermicular to the chrysalis state, they pass through a change unexperienced by other insects. From the shortness of their lives, all these vicissitudes must rapidly succeed each other: this circumstance does not prevent many species from constructing a cocoon for their last metamorphosis, of a curious fabric. The greater part of these cocoons are of silk, with a mixture of other materials; those most common with us satisfy themselves with their own skin, which becomes an incrustated covering to protect them during their dormant state.

When the different members have acquired sufficient firmness, the fly is ready to burst from its shell in its winged form. The covering of the chrysalis, especially of those that are metamorphosed in their own skin, would seem by its hardness an effectual bar to that event. About the time, however, of its change, the head of the fly is capable of being swollen and dilated in an unusual manner; and it is by means of this dilatation that the fly bursts its covering, and opens a passage for its escape.

The food of flies is, as we shall see, as various as their different kinds; some being supported wholly by vegetable substances, while others are carnivorous; and among the latter there are some that only devour flesh in a state of putrefaction.

The female flies are all fecundated by copulation; an act in which the most inattentive observer must have frequently seen them engaged. The far greater part of insects are oviparous; some, however, belonging to this genus bring forth living young. Many of the viviparous flies possess a degree of fecundity that must appear altogether incredible to those who have not been conversant in the study of insects. Some of them have been found to contain in their body no less than twenty thousand living animals at one time. We now proceed to a description of the species enumerated by Gmelin.



*A. With two short Feelers.*

§ *a.* Sucker with a single bristle, without sheath; antennæ short, clavate, furnished with a lateral hair.

† *Hair of the Antennæ feathered.*

## Species.

**JEJUNA.** The colour of this fly is cinereous; abdomen pellucid, with three black belts; the legs are pale. It inhabits Tranquebar. Thorax and scutellum dusky, with a paler margin; antennæ subferruginous; legs pale, with black tarsi.

\* **MERIDIANA.** This is an European insect, and found in our own country. It has been described and figured by Harris in the work already referred to. It is hairy and black; front golden; wings ferruginous at the base. There is a variety that has a faint rufous spot at the base on each side of the abdomen.

\* **CARNARIA.** This is hairy, black; thorax with paler lines; abdomen shining, and tessellate. It is found in almost all parts of Europe, in putrid carcases and meat.

The *Musca carnaria*, or the common large blow-fly, as every one knows, deposits its eggs on animal flesh, either fresh or putrid. The larvæ, or maggots, hatch in a few hours, and, when full grown, which happens in eight or ten days, are of a white, or yellowish-white colour, with a slight tinge of pale-red, and of a lengthened shape, with a sharpened front, in which the mouth is situated, and from this the body gradually enlarges in size to the last segment, which is of a very broad and flattened form, surrounded by several slightly prominent tips, and furnished with a pair of specks resembling eyes; so that an inaccurate spectator might easily mistake this part for the head, and the proper head for the tail. When the animal changes to a chrysalis, the skin dries round it, and the whole assumes an oval form, and a reddish colour, soon changing into a reddish-brown. In ten days more the fly itself emerges, which is too well known to require particular description.

**CARNIVORA.** Dusky; abdomen blue, subtessellate, the segments edged with black. This is found very common in Germany, in putrid meat. The head is black, mouth ferruginous; thorax and scutellum hairy, blackish, without lines, legs black.

**LARDARIA.** Black; thorax and abdomen tessellate. This also is found in Germany: it is less than the *M. carnaria*; the abdomen is subglobular, obtuse, and the legs are black.

**RUFICORNIS.** This is hairy and cinereous; thorax with black lines; abdomen tessellate; the antennæ are rufous. Found in the East Indies. The head is cinereous, with a black line on the crown; the thorax has three black lines, the middle one reaching down the scutellum.

**RUFILANS.** Thorax cinereous, with black lines; abdomen tessellate, the tail rufous. This species is found in South America: it is larger than the *M. domestica*, to be shortly noticed. The mouth is whitish; the antennæ are black; the thorax and abdomen are hairy.

**MACULATA.** About the size of the last; thorax and abdomen with numerous black spots. It inhabits divers parts of Europe. The head is cinereous, with a black proboscis; antennæ black; abdomen with two black lines in the middle beneath; wing whitish, immaculate; legs black.

**RUDIS.** This is found in Germany, likewise larger than the *M. domestica*: hairy; thorax grey; abdomen tessellate;

the mouth is cinereous; the antennæ are black; the scale of the poisers whitish; the legs black.

**OBSCURA.** Hairy, dull black; wings and scales of the poisers cinereous. Found in Germany.

\* **DOMESTICA.** Hairy, black; thorax with five pale lines; abdomen tessellate; beneath pale at the base. Inhabits many parts of Europe, on horse-dung. It seldom makes its appearance till July.

**OCCIDUA.** Thorax with black lines; the abdomen is banded. It inhabits South America, and is smaller than the last.

**STRIATA.** Cinereous; thorax with black lines; abdomen tessellate. It is about the size of the *Domestica*, and inhabits Germany. The head is cinereous, with a black line in the middle; wings white; tail a little roundish; legs are black.

**AMERICANA.** Black; sides of the thorax grey, dotted with black. It is found in several of the West India islands, and resembles the *Cæsar*. The head is smooth and black; thorax glabrous, with an impressed line in the middle, the sides are downy, with three black dots; scutellum large, rounded, subtriangular, black; the wings are also black, and the scale of the poisers prominent and vaulted.

**RETUSA.** Hairy, grey bronzed; abdomen with a gold gloss; tail retuse. This species inhabits New Holland. A specimen is preserved in the museum of Sir Joseph Banks. The head of the insects of this species is whitish, with a black frontal line; thorax hairy; segments of the abdomen shining gold, the edges black; wings white, with a brown spot at the base.

**PATRIDA.** Shining bronze; abdomen globular; legs black. It inhabits the American islands, and is about the size of the next species, the *Cæsar*. Its wings are white.

\* **CÆSAR.** Hairy, shining green, with black legs. It inhabits Europe, and feeds on putrid meat and carcases; there is a variety not more than a third part as large.

**MEGACEPHALA.** Shining bronze; segments of the abdomen edged with black. It inhabits Guinea; is the same size as the *Cæsar*; the head is cinereous, with a brown front; wings whitish; legs black.

**FELINA.** Shining bronze; abdomen testaceous, with a bronzed tail. It inhabits New Spain. Mouth cinereous, downy; eyes chefnut, dotted with black; thorax hairy; abdomen diaphanous; legs black bronzed, with testaceous flanks.

**CORNICINA.** Thorax polished coppery; abdomen green bronze; legs black. This is found in various parts of Italy; and very much resembles the *M. cæsar*: the sides of the lip have a silvery gloss.

\* **CADAVERINA.** Body polished; thorax blue; abdomen green. This is found in several parts of Europe, and in our own country.

**STYGIA.** This is a hairy insect; the thorax is blueish; abdomen bronze; legs ferruginous. Inhabits America. The head is brown, and the mouth ferruginous.

\* **MORTUORUM.** Thorax black; abdomen green bronze; legs black. It is found in many parts of Europe, in carcases, and is rather a large fly.

**LEONINA.** Thorax brassy, dotted with white; abdomen blue, with a white dot on the second segment, and two on the last. It inhabits New Holland, and a specimen is preserved in Sir Joseph Banks's museum.

**VOMITORIA.** Thorax black; abdomen shining blue; front fulvous. This is an European insect.

**VESPILLO.** Hairy, blackish; abdomen black bronze; the



## MUSCA.

the legs are black, is not above half the size of the last, and is found at Kiel.

**CYANEA.** Thorax and abdomen of a bright blue; legs black. Inhabits Africa. A specimen is in the museum of sir Joseph Banks: scale of the poisers milk-white; fore-thighs blue.

**MACELLARIA.** Thorax coppery, with black lines; abdomen bronzed; legs black. Inhabits the American islands: it is of the size of the *M. cæsar*; the thorax of this species has three black lines; the wings are white.

**VULPINA.** Thorax black, with four grey lines; abdomen subferruginous, spotted with black. Found in different parts of Europe.

**NIGRIPES.** Hairy, black; sides of the abdomen testaceous, tessellate with white. Inhabits Germany. The head is black; the mouth silvery; antennæ black; wings whitish; scale of the poisers clear white.

**CORVINA.** Black; the abdomen is testaceous, with a black dorsal line. It is found in Germany, and is the size of the *Vulpina*.

**TESTACEA.** Cinereous; scutellum, abdomen, and legs testaceous. It inhabits Germany. The wings are white; the antennæ are black.

**PALLIDA.** Pale testaceous, with black tail and ends of the legs. It inhabits Germany, and is the size of the *M. testacea*. The body of this insect is covered with black hairs; the last segment of the abdomen is brown; the legs are pale, tipped with black.

**DISCOLOR.** Thorax dull brassy; abdomen pale; the edges of the segments and tail are bronzed.

**NEBULO.** Cinereous; thorax with black lines; abdomen testaceous, with a black line down the back. Found in the East Indies. The head is cinereous, with a black frontal line; wings white, immaculate; abdomen slightly tessellate with white; the legs are black.

**MACTANS.** Testaceous; wings with two black dots; the posterior one transverse. It inhabits Cayenne.

**AUGUR.** Cinereous; abdomen blueish, the sides testaceous, pellucid. It inhabits New Holland; and is in the museum of sir J. Banks.

\* **CANINA.** Grey; thorax with four black dots; segments of the abdomen edged with black. It is found in this country, and also in several parts of Germany. The thorax is very hairy; the legs testaceous.

**STRIGOSA.** Hairy, cinereous; thorax with five black lines, the middle ones punctured; abdomen with black streaks and line down the middle. It is found frequently in Kiel. The mouth of this insect is snowy; the antennæ are black, and the wings white.

**PLEBEIA.** Black, with rufous legs. This is an inhabitant of Germany. Head black, with a changeable grey gloss; the thorax is hairy, with a cinereous line in the middle at the base; the scutellum testaceous; the ends of the legs are black.

**RUSTICA.** Grey, with rufous thighs. This is a large insect, and found in Germany.

\* **TIGRINA.** Hairy, cinereous; tips of the thighs and flanks ferruginous. It inhabits England, and is of the size of the *M. domestica*. Its wings are white, and the tail terminated by a style.

**MEDITABUNDA.** Hairy, dusky; abdomen cinereous, with four brown dots. It inhabits Italy. Its mouth is whitish, and the flanks rather red.

**ELATA.** Pale testaceous; wings with a brown rib and two dots. It inhabits Europe. The mouth is vesicular white; antennæ rufous, with a black feathered bristle; wings

whitish, with two spots, the hinder one transverse; the rib black.

**LUPULINA.** Blackish, with testaceous abdomen and hind-legs. It inhabits Zealand, and is small. The antennæ are testaceous; the thorax black with a grey gloss; wings pale testaceous.

**LUDIFICA.** Black; thorax with faint white lines; abdomen ovate, testaceous; the first segment and line down the middle black. Inhabits Kiel; is the size of the *M. domestica*. Head black, mouth silvery; wings whitish.

**LONGIPENNIS.** Black; wings yellowish and longer than the body. It inhabits Germany.

**FUNEBRIS.** Rusty-brown; abdomen black, the edges of the segments pale. It is found in Germany, and is a very small insect. The head is dusky; white silvery; wings large hyaline; legs testaceous.

**SUBTOMENTOSA.** Downy; thorax slightly bronzed; abdomen black, with three bands something interrupted and tipped with yellow. It is found in Europe.

**CLAVIVENTRIS.** Brown; abdomen clavate; flanks yellow. It inhabits Europe.

**LUTEA.** Yellow; thorax brown, with an oblong yellow spot on each side beneath. It is found in divers parts of Europe.

**FUSCIPES.** Thorax brown; abdomen yellowish-grey; legs yellow, the ends brown. Found in Europe.

**ALTERABILIS.** Black; abdomen changeable grey. Inhabits Europe.

**VARIA.** Black; abdomen varied with yellow, grey, and black. Inhabits Europe.

**MELANURA.** Cinereous, with a black tail; four hind-legs at the tip and flanks ferruginous. It is found in Germany.

**STRIGOSA.** Testaceous; crown with a ferruginous dot on each side; wings with numerous transverse testaceous streaks. It inhabits Europe.

**ARGENTATA.** Cinereous; thorax with four black lines; abdomen changeable grey; the front on each side is silvery. Inhabits Europe.

**ALBIFRONS.** Black, with a white front. Inhabits Europe.

**FURTA.** Black; wings deflected, brown with a white lateral margin. It inhabits Upsal, under the leaves of herbs; very small; antennæ testaceous, concealed within the head; legs white.

**TUGURIONUM.** Cinereous; antennæ, feelers, scutellum, and legs ferruginous. Inhabits Austria.

**TAU.** Black; abdomen pale ferruginous, with a black base, and line down the middle. It inhabits Austria.

**DECEPTORIA.** Cinereous, with rufous legs; abdomen grey ferruginous, with a black dorsal line. This is also found in Austria.

\* **MELANOPYRRHA.** Downy, black; abdomen with a rufous tip. It inhabits England and Germany. The front of this insect is pale; its eyes are black; scutellum olive; wings with fulvous nerves at the base, and a large brown spot in the middle.

**OLEE.** Brown; thorax downy, blue, with three protuberances; tip of the scutellum and thighs yellow. Found in the southern parts of Europe, particularly in the south of France and Italy.

**4-MACULATA.** Thorax black; breast with two fulvous spots on each side; abdomen purplish violet. It inhabits New Zealand.

**BIMACULATA.** Blue; breast with a whitish spot on each side; abdomen green with a blue base. Found in New Holland.



†† *Hair of the Antennæ naked.*

\* **FERA.** Black; sides of the abdomen testaceous and diaphanous. This is an European insect. The front and mouth are of a buff colour; thorax glossy black, hairy; abdomen orange-brown, with a broad unequal black stripe down the middle, the tail hairy; wings hyaline; the rib at the base golden yellow; legs black, the ends yellow.

4-**PUSTULATA.** Hairy, black; abdomen with two rufous spots on each side; the legs are black. It inhabits Germany. The mouth is whitish; scutell ferruginous; wings whitish with a small black dot in the middle; legs black.

**TESSELLA.** Black; thorax ferruginous; sides of the abdomen testaceous, diaphanous, and tessellate with white. Found in divers parts of Germany; it very much resembles the Fera.

**LURIDA.** Hairy; thorax brown; abdomen black, the sides at the base and legs testaceous. This also resembles the Fera, and is found in Germany; the antennæ are ferruginous with a black club; mouth whitish; thorax hairy, brown with a yellowish scutell; abdomen black, the base pellucid, testaceous at the sides, which are joined by two black streaks.

**BIFASCIATA.** Rufous; abdomen with two gold bands. Inhabits the American islands, and is a large insect; the antennæ are black; the mouth white; thorax and abdomen hairy; legs black, with ferruginous claws.

\* **GROSSA.** Hairy, black, wings ferruginous at the base. It is found in many parts of Europe, and in this country; it feeds on horse-dung. This is the largest of European flies; it is much larger than the largest blow-fly, and is of a dark colour, with the wings dull orange-coloured at their base. In its general appearance it resembles the *M. meridiana*, which is similar in colours, but stands among the hairy flies with plumed antennæ.

**HYSTRIX.** Very hairy, and black with a whitish mouth. It inhabits America; body covered with long stiff hairs.

**TREMULA.** Hairy, glossy, and black; base of the wings and scale of the poisers ferruginous. It inhabits Europe. This is less, and of a more oblong shape, than the *M. fera*.

\* **ROTUNDATA.** Thorax black, with large ferruginous spots; abdomen ferruginous, with a black line, which in one sex is composed of dots. Inhabits Europe. The abdomen, in one sex, is ferruginous, with a black stripe down the middle, in the other pale, with four black dots; wings hyaline, with a pale gold base.

**PUPARUM.** Hairy, blackish; thorax with faint white lines; abdomen with three white bands. It inhabits Kiel. The antennæ are ferruginous, with a black club; head white, with black bristles; wings whitish, with a black dot in the middle.

\* **LARVARUM.** Blackish; scutell testaceous at the tip; abdomen tessellate, whitish. This is found in England; it deposits its eggs in the larvæ of moths and butterflies; the larva devours the garden cabbage, making the root stumous, and the head lax.

**LARVATA.** Black; abdomen sprinkled with white and shining vesicles. It inhabits the Ural.

\* **RADICUM.** Blackish; abdomen a full black, with two cinereous bands. Inhabits many parts of Europe, in gardens.

**PAGANA.** Hairy, cinereous; thorax with brown lines; scutell and legs testaceous. It inhabits Denmark. The mouth whitish; the crown grey; antennæ black; wings white, the base a little testaceous; legs tip with black.

**VARIA.** Grey; abdomen rufous, varied with white and black. It inhabits the East Indies, and is about the same size as the *M. radicum*. The mouth of this species is white; antennæ incumbent, rufous tip with black; tail with long black bristles; wings dusky; legs black.

\* **BRASSICARIA.** Thorax greenish; abdomen cylindrical and black; the second and third segments rufous. It inhabits Europe, and is found at the roots of cabbages. The head is rufous; the wings brownish hyaline.

\* **SEMIARGENTEA.** Thorax silvery-green; abdomen silvery-grey with a yellow band at the base. This is found in England. The antennæ and head are brown; wings hyaline; legs pale.

**COMPRESSA.** Hairy, black; thorax with three silvery lines; abdomen cylindrical and rufous, with a black dorsal line; thighs rufous. It is found in Spain, in houses.

**NAPOERASSÆ.** Hairy, grey with longitudinal black lines down the back and sides. This is found in different parts of Sweden, and is extremely destructive to the roots of turnips, especially of those growing in sandy soils: its larva is white, and without feet; the head is pointed and tip with black; undergoes its transformation about the month of September; the pupa is brown, oblong, annulate with segments, and becomes a perfect fly in the following May.

**CRASSICORNIS.** Thorax hairy, with pale black lines; abdomen ferruginous, the tip tessellate with black and grey. It inhabits the American islands, and is very large; the head is silvery; the crown dusky; antennæ long, incumbent, black; scutell subferruginous; wings dusky; scale of the poisers white, legs black.

**ERINACEA.** Hairy, black; lip cinereous; wings white with a black rib. Inhabits Germany; the antennæ are oblong and black; thorax and abdomen very hairy, black, immaculate; scale of the poisers arched, snowy; legs black.

**ÆSTIVATIONIS.** Hairy, black; wings with transverse white dots. It inhabits Europe.

**VOLVULA.** Black; abdomen cylindrical, with two whitish bands in the middle. It inhabits Italy, and is about the size of the *Compressa* already described. Head whitish, with a black line on the crown; thorax blackish and slightly tessellate; abdomen very hairy.

\* **LATERALIS.** Black; abdomen red with a black tip, and striate down the middle. It inhabits Europe, and is the size of the *Domestica*. The mouth of this species is white.

**ALBIFRONS.** Hairy, black; abdomen tessellate, the base ferruginous each side. It inhabits Denmark. Abdomen subcylindrical.

\* **CANICULARIS.** Blackish; second segments of the abdomen and sides of the third diaphanous. It inhabits Europe, in swarms under the shade of trees; it is only half the size of the *M. domestica*.

\* **PLUVIALIS.** Cinereous; thorax with five black spots; abdomen with obsolete spots. It inhabits Europe, and appears in vast swarms before rain.

\* **SUBSULTANS.** This is entirely black with hyaline wings; hind thighs formed for skipping. Inhabits Europe; is very small, and flies by a sort of skipping motion.

**CHOREA.** Black, with white wings. Found in Germany, and very like the *Roralis*, described below.

**LABIATA.** Hairy, blackish, with a shining silvery lip; wings white, immaculate. Found in Germany, and in its skipping motion resembles the *M. subsultans* just noticed. The legs are black; the scale of the poisers arched and snowy.



## MUSCA.

**VERNA.** Cinereous; abdomen with two streaks of black dots. This is found in France; the body is small, hairy; wings white, immaculate; thighs testaceous.

\* **RORALIS.** This insect is of a deep black; wings whitish at the tip. It inhabits Europe, and is small; the antennæ are very short, incumbent; abdomen hairy, the poisers black.

**FENESTRALIS.** Glabrous, black; abdomen rugged above, with white streaks, wings brown; legs black, and the hind ones long.

**RUGOSA.** Glabrous, black; abdomen rugged and immaculate above; wings brown. Inhabits Kiel, is larger than the last; the legs are black, with ferruginous tarsi.

**SENILIS.** Glabrous, black; abdomen rugged and immaculate above; wings white; legs testaceous. It inhabits Germany; the head and thorax naked.

\* **SERRATA.** Cinereous; rib of the wings ferrate, with short hairs; abdomen and legs ferruginous. Found in divers parts of Europe.

**NIGRICORNIS.** Cinereous; segments of the abdomen tipped with black. Inhabits the East Indies, is the size of the *Domestica*; head snowy; mouth fringed; thorax with faint black lines; scutellum brown, with a cinereous margin; wings white, hyaline; legs black.

**CINEREA.** Hairy, cinereous; antennæ and legs blackish. It inhabits India, and is about the same size as the last. In this species the proboscis is tipped with black; scales of the poisers snowy; wings whitish; legs dusky, with black tarsi.

**SCALARIS.** Black; abdomen cinereous, with five black bands connected by a line down the middle. It inhabits Germany, and is a little larger than the *M. roralis*. The orbits of this fly are silvery; the wings white, and the legs black.

4-**MACULATA.** Hairy, black; tip of the abdomen with four grey dots. This is found at Kiel, and is larger than the next, the *Cellaris*, which is well known here.

\* **CELLARIS.** Black; abdomen paler; eyes ferruginous; found chiefly in wine vaults; hence its specific name.

**CYLINDRICORNIS.** Antennæ long and cylindrical; body hairy, black, with yellowish wings. It inhabits France, and is less than the *M. cellaris*. The last joint of the antennæ is cylindrical, nearly as long as the thorax, with a long whitish hair; tarsi yellowish.

**CILIATA.** Hairy, black; segments of the abdomen blueish at the base. It inhabits some parts of the European continent, and is about the size of the *M. meteorica*. The head is black; sides of the mouth silvery, with a black line; wings cinereous, hyaline; scales of the poisers fringed with white.

\* **METEORICA.** Black; abdomen pale grey; wings yellowish at the base. This is found in our own country, and, like the *Pluvialis*, comes in swarms before showers of rain.

**ATRATA.** Naked, shining black; wings hyaline; joints of the legs testaceous. It inhabits Germany, and is small; the head is subglobular and black; the eyes testaceous; wings hyaline.

\* **FRIT.** Black; poisers, end of the hind legs, and abdomen of a pale green. It inhabits Europe, and is not larger than a flea. The larva is found in the ears of barley and other grain, to which it is so exceedingly destructive, that in one year corn to a vast amount has been destroyed by its ravages; in Sweden it is said one-tenth of the corn is annually destroyed by this insect.

**PUMILIONIS.** Black, beneath yellow; head and two lines on the thorax yellow; poisers white; legs cinereous,

tip with black. The larva of this fly has a sharp head, black at the extremity; the body is white, and composed of ten segments; it is changed into the pupa form about the end of May. The pupa is yellow, shining, and composed of segments; the perfect insect appears about the month of June; but it does not appear at what time it deposits its eggs. The larvæ are perceived early in the spring, in the centre of the stalks of wheat and rye, very near the root. It has been thought that the eggs are deposited in September or October, because the earliest sown grain is most affected by them. White wheat is more liable to the depredations of this insect than the red. The stalks in which the larva is lodged do not advance in growth, but continue in a very dwarf state, hence the insect itself has obtained its specific name. The stalks become yellow early in the summer, and soon after die away; but others usually spring up on the same root, and supply their place. This insect first attracted notice in our own country in 1791, when it excited a considerable degree of alarm, lest it should prove as mischievous as the Hessian fly, that has done so much injury in America. An account of this insect has been given by Mr. Markwick in the *Linnean Transactions*; but the first description of the *Pumilionis*, and of the mischief caused by it, was given in the *Transactions of the Royal Academy of Sciences at Stockholm* for the year 1778, by M. Bjerkander, who discovered it on the young shoots of rye early in the spring, and in such quantities, that in some fields he found three or four stalks affected in a square foot.

**LEPRÆ.** Shining black; antennæ and legs white; eyes reddish gold. It inhabits America. It breeds in the legs of the natives who are afflicted with the elephantiasis, and is smaller than a louse.

\* **PUTRIS.** Black; wings white, with a black rib. It inhabits Europe. The larvæ of this fly are the maggots found in decayed cheese, bacon, &c. well known in common language by the name of hoppers.

**ATERRIMA.** This is silky black; wings white, with a double black rib half way down; legs long, compressed. Inhabits France, and is of the size of the *M. putris*.

**MANICATA.** Black; abdomen with pale marginal spots; fore-thighs thickened. Inhabits France, and is larger than the *M. cellaris*. The head is brown, mouth grey, and wings hyaline.

**STRIGULA.** Thorax with two pale lines; abdomen black, the segments with snowy edges. It is found in France.

**CUPRÆA.** Body glaucous bronze; thorax green; abdomen coppery, hence its specific name; poisers naked. This is an European insect. The legs are black, and very rarely yellow.

\* **AURATA.** Thorax polished, brassy or greenish; abdomen polished, obtuse, brownish-gold. Inhabits Europe. The head is black; segments of the abdomen blackish; wings dusky; abdomen sometimes blue.

**ÆNEA.** Shining green bronze; head and legs testaceous. Found in the East Indies.

\* **POLITA.** Polished; thorax blue; abdomen brassy; poisers naked. An inhabitant of Europe. Poisers and legs yellow.

\* **VIDUATA.** Black bronze; abdomen brassy; scales of the poisers fringed. It inhabits Europe, chiefly found in gardens.

**PUBERA.** Black; last segments of the abdomen incurved, with reflected down on each side. It inhabits Europe.

**FASCIATA.** This species is testaceous, with a black abdomen; wings brown at the tip, with a white band; legs long;



long; it is found in the American islands; the body is very narrow: there is a variety of this species, that has its head and thorax black.

\* **PETRONELLA.** Livid; front red; legs long, testaceous, with black joints. Found on the surface of waters in Europe.

**CYLINDRICA.** Glossy black; head globular, with testaceous eyes; legs long and yellowish; it is found chiefly in Germany. The antennæ of this species are small, testaceous, with a black hair; thorax naked and thin; abdomen ovate, with testaceous spots beneath, at the base; wings white.

**FILIFORMIS.** Body filiform, black; head ovate with red eyes; legs very long and testaceous. Found in Germany. In shape it is very long and narrow.

**TIPULARIA.** Body long and black; head and legs testaceous; wings tipped with brown. Found on the African continent, particularly in Barbary. The head is pale and testaceous, with a scarlet crown.

**PETIOLATA.** Hairy and black; abdomen compressed; wings black. It is found in Cayenne, and is the size of the Compressa. The head of this insect is black, with a white mouth, and reddish eyes; poisers snowy, abdomen long and black; the segments a little whitish at the edges; the legs are black.

**EPHIPPIUM.** Body long and black; thorax rufous; legs testaceous. It inhabits France.

**ELONGATA.** Testaceous; legs long, hind thighs black, the ends whitish. It inhabits Sierra Leona. In this species the eyes are large and brown; and the wings hyaline.

**LONGIPES.** This is black; wings are brown, with a white band at the base, and dots; the legs are long and testaceous. This is found in Cayenne.

**ANNULATA.** Black; wings hyaline, with a brown band; legs long, black, hind thighs with two white rings. Found also in Cayenne.

**CRISTATA.** Hairy, cinereous; abdomen and legs pale; front ferruginous, clavate, and projecting beyond the antennæ. Inhabits Barbary.

**CORRIGIOLATA.** Black, with long yellow legs; thighs with a black ring. Is found in the stagnant ditches in various parts of Denmark.

\* **CURSITANS.** Black, with long pale legs; wings incumbent, white. It is found in many parts of this country, on trees and walls, resembles a Cimex, and runs with great velocity.

**CIMICOIDES.** Black; wings incumbent, white, with two black bands. It inhabits Denmark, is found about trees, and, like the last, is very like a Cimex. The last fourteen species are distinguished from the rest by a globular head, with prominent rounded eyes, and a linear body with long legs.

**PALIPES.** Shining bronze; abdomen with two yellowish dots at the base; the legs are yellowish. It inhabits Germany, and is very small.

\* **UNGULATA.** Brassy green; tail hooked; the legs are long and livid. It is found in many parts of Europe, about waters.

\* **NOBILITATA.** Brassy green; tail hooked; wings with a black spot tipped with white. Found in Europe, in gardens.

**EQUESTRI.** Brassy green; abdomen with five black bands; the tail is hooked; the wings are white, with a brown spot. This is found in Brazil; sir Joseph Banks has a specimen of it in his museum.

\* **NOTATA.** Hairy; thorax brown, with four greenish lines; abdomen bronzed; wings clouded with brown, with a black dot. It inhabits England.

**GLABRATA.** Shining black bronze; head black; antennæ testaceous. This species is found in France, and is the size of the Ungulata just noticed.

**NIGRIPES.** Shining brassy; antennæ and legs black; wings white and immaculate. It inhabits France, and is very small; the thorax and abdomen are hairy, and the legs black.

**ARROGANS.** Hairy, black; wings brown, with three white bands; an inhabitant of Europe.

**LONGICORNIS.** Antennæ long; body hairy; shining bronze; abdomen darker. It inhabits the American islands.

**ROSTRATA.** Body bronzed; abdomen with black bands; mouth horny, prominent, black. Inhabits Germany; is the size of the M. unguata.

**4-FASCIATA.** Pale, with four black bands on the abdomen; wings white. It inhabits Germany, and is a little less than the last.

**FERRUGINEA.** This, as its name imports, is ferruginous; the wings white, with a ferruginous rib and streak. It inhabits the East Indies.

**HISTRIONICA.** Cinereous, with a ferruginous head; abdomen cylindrical, and black with a whitish base; wings with a black spot at the tip. It inhabits the East Indies.

**SUILLA.** This is testaceous; the segments of the abdomen are edged with black; the wings are marked with two black dots. It is found in various parts of Germany.

**FLAVEOLA.** This species is hairy and testaceous; abdomen downy, tipped with brown, and is found also in Germany. The head is testaceous; the antennæ are brown, and the wings white.

**FURCATA.** Hairy, dusky; scutellum projecting, and forked. It inhabits France.

**ORATORIA.** Testaceous; abdomen pale, the segments are edged with black; the wings are marked with three or four brown dots. This inhabits the Barbary coasts; the head and thorax are hairy, of a pale colour, and testaceous.

**MERDARIA.** Hairy, cinereous with rufous thighs; wings white with a brown dot. It inhabits Kiel. The mouth is whitish; the crown is generally black, with a reddish spot; antennæ black; abdomen flat and hairy.

**LUTARIA.** Grey; abdomen, tail, and legs ferruginous. It inhabits Kiel. The mouth is whitish; the antennæ are rufous; the abdomen beneath and at the sides brownish; wings yellow with a small brown nerve in the middle, and a larger one towards the tip.

**LIVENS.** This, as its name signifies, is of a livid hue, with a ferruginous spot on the front; joints of the legs ferruginous. It is found in Denmark. The mouth is white, front yellowish, with a red spot behind the antennæ; thorax and abdomen naked.

\* **CUCULARIA.** Thorax grey; abdomen ferruginous; wings yellowish, with a darker dot. It is found in many parts of Europe. The antennæ have a snowy hair on each.

\* **SCYBALARIA.** Hairy; dull ferruginous; wings yellowish, with a dark dot; legs rufous.

**MARGINATA.** This is of a dull lead colour; wings reticulate, with a black rib. Inhabits Saxony, and is the size of the last. The mouth is vesicular white; the antennæ are brown, with a long white hair; wings reticulate, with white dots, the rib black.

\* **FIRNETARIA.** Antennæ slightly feathered; body glabrous, ferruginous; wings immaculate. It is found about dung-heaps in various parts of Europe.

**NIGRIPENNIS.** Thorax cinereous; abdomen, wings, and legs black. It inhabits France, and is the size of the last. The mouth is ferruginous, and the head has a ferruginous spot.



spot above the antennæ ; the abdomen is paler at the base.

**RUFIFRONS.** Cinereous ; head ferruginous with two black dots ; rib of the wings black. This is found in Italy, and is about the size of the *Marginata*. Mouth vesicular white ; antennæ rufous, with a black margin all round, and projecting white hairs ; wings whitish with black dots, and the legs are rufous.

**GRAMINUM.** Front impressed, fulvous ; wings clouded, with two dots, the hinder one linear and transverse. This species inhabits France, and is the size of the last.

**CINCTA.** This species is cinereous ; head and legs testaceous ; wings clouded with a black rib. It inhabits Denmark.

**RETICULATA.** Hairy, cinereous ; wings faintly reticulate ; the rib is dotted with black and white ; found in divers parts of Italy ; the head and antennæ are rufous ; the mouth snowy.

**CONTIGUA.** This species is testaceous ; wings white with three black dots united to the rib, and a single distinct one. This is a Brazilian insect. The mouth is whitish ; the thorax hairy ; the legs testaceous.

**PUNCTATA.** Cinereous with rufous legs ; wings white with rows of black dots between the nerves. It is found in Kiel, and is known by its whitish mouth and greyish body.

**UMBRACULATA.** Brown ; thorax with faint ferruginous lines ; breast and legs testaceous. It inhabits France, and is a small fly.

**PENNIPES.** Hairy ; abdomen rufous ; wings black, with a ferruginous spot and white hind margin. It inhabits North America.

**LUGENS.** Thorax with yellow lines ; abdomen blue ; wings black, with two white bands, which are bifid at the outside. It inhabits Sierra Leona.

**MOERENS.** Hairy, black ; thorax with white lines ; wings long, black, with a white line at the base, and three bands, the first of which is bifid. It inhabits Guinea.

**OLEÆ.** Thorax greyish ; abdomen conic, ferruginous, the sides spotted with black. It inhabits Italy ; the larva is found in the fruit of the olive. The head is yellowish, with two black dots above the mouth ; thorax with faint black lines ; abdomen with three black dots on each side ; wings hyaline ; legs yellow.

**CLAVATA.** Testaceous ; abdomen brown, the segments are pale at the base, and terminated by a clavate style. The antennæ and thorax are hairy ; the wings are large and whitish.

**PARIETINA.** Cinereous ; wings brown spotted, and dotted with white, front testaceous. It inhabits Europe.

**DISCORDEA.** Black ; wings with white dots and marginal lines ; head and legs testaceous. It inhabits Denmark, and is a large insect. The eyes, thorax, and abdomen of this fly are black and immaculate.

**CONNEXA.** Abdomen cylindrical and black ; wings white with three black bands, the third connected with a spot at the tip. It inhabits France, and is large.

**UMBRARUM.** This species is cinereous ; the abdomen is marked with black bands ; wings brown spotted with white. It inhabits many parts of Europe, and is found among flowers.

\* **VIBRANS.** Wings hyaline, tip with black ; the head is red. It inhabits Europe, and is continually agitating its wings.

**PUNCTUM.** Wings with a black lateral dot at the tip ; abdomen bronzed. It inhabits France, in moist shady places.

\* **VOL. XXIV.**

\* **CYNIPSEA.** Wings with a lateral black dot at the tip ; abdomen cylindrical. It inhabits Europe, and yields a fragrant smell.

\* **GROSSIFICATIONIS.** Deep black ; wings blueish, tip with white. Is common in shrubberies, in many parts of Europe.

**ARTEMISIÆ.** Yellow ; wings white, with five marginal black spots. Inhabits Denmark, and, as its name imports, on the *Artemisia vulgaris*.

**COMBINATA.** Yellowish ; abdomen black ; wings with two black dots at the tip. This is found about many flowers in European fields and gardens. The wings are white with a dot on the thin edge, and at the tip.

**FLORUM.** Yellow ; wings hyaline, with three black dots on the disk, the middle one transverse, and a black curve at the tip. It inhabits Italy, and is larger than the *M. combinata*.

**ERYTHROCEPHALA.** Grey-brown ; head rufous, with a black dot on the crown. It inhabits Sweden, and is found hovering about flowers. The wings of this species are white with a black dot and transverse line ; the legs are black.

**ARNICÆ.** Testaceous ; wings cinereous with deep black marginal spots and faint brown dots. It inhabits Europe, and is found on flowers.

**PULCHELLA.** Hairy, cinereous ; disk of the wings yellowish-brown, with a flexuous white hyaline fillet. This is found in Italy.

\* **STYLATA.** Cinereous ; abdomen black ; wings white, with two brown approximate dots, and a curve at the tip. This species is found in England, among woods, and in meadows. Independently of its specific character, its antennæ are ferruginous ; the front is yellow ; the crown is cinereous ; thorax hairy, cinereous, with a yellow lateral line ; scutellum and coxae yellow ; abdomen oblong, black, terminated by a style as long as the body ; the legs ferruginous.

**RUFICAUDA.** This is cinereous ; the wings are white, with three costal black spots ; style at the end of the tail rufous, with three black dots : hence its specific name. It is found in France, and resembles the last.

**ARCUATA.** Testaceous ; wings with two black spots and curve at the tip. It inhabits Germany, and resembles the *M. stylata*.

\* **UMBELLATORUM.** Cinereous, with ferruginous legs ; wings white, with transverse brown spots and tip. It inhabits England. The head is whitish ; the antennæ rufous ; tail reddish, with a black style.

**HERACLEI.** Cinereous ; wings white, with brown dots, two bands and a line at the base. It inhabits Kiel, and is the size of the last.

**DORSALIS.** Wings white, with a few black dots ; thorax cinereous ; abdomen rufous, with a black dorsal line. It inhabits the meadows of Bohemia. The mouth is white ; antennæ rufous ; legs rufous, black at the ends.

**SEMINATIONIS.** Wings black, with cinereous specks ; abdomen yellow at the base beneath. It inhabits the meadows at Leipzig. Is the size of the *Domestica*. The body is entirely grey, or brown, with minute grey specks.

**PICTA.** Brown ; wings black, with two opposite white spots on each side, and two white dots between them. It inhabits North America.

**VITTATA.** Hairy, black ; head marginal ; streak on the thorax, scutellum, and flanks yellow ; wings with a white band. It inhabits Guinea.

\* **FLAVA.** Yellow, as its name imports ; antennæ with a black



## MUSCA.

a black dot at the tip. It inhabits Europe, and varies very much in its size.

\* **4-PUNCTATA.** Yellow, with four black dots on the abdomen. It inhabits Europe. The dots on the abdomen are remote.

**ÆSTUANS.** Wings hooked, white, with a blackish central dot. It inhabits Europe, on flowers.

**LINEATA.** Black, with yellow lines on the thorax; scutellum and body yellow beneath. Inhabits many parts of Europe, in ears of barley, which it renders sterile. The head is yellow, with a black crown; wings immaculate.

**ROSÆ.** Brassy-black; head rufous; legs testaceous. It inhabits Kiel, on flowers, and is very small; wings hyaline.

\* **SERATULÆ.** Wings white; thorax greenish; abdomen cinereous, with four lines of black dots. It is found on thistles in many parts of Europe.

\* **URTICÆ.** Black; wings white with a terminal brown dot, and three distinct bands. It is found in England and other parts, on the nettle, as its specific name imports.

**CRASSIPENNIS.** Cinereous; abdomen with black bands; wings milk-white, with four abbreviated black bands. It inhabits Germany.

**CORNUTÆ.** Antennæ projecting, spinous, and one-toothed; body grey; wings white, with four brown bands. It is found in Germany.

**DAUCI.** Wings white, with four distinct black bands; scutellum and legs testaceous. It inhabits Sweden, and is less than the *M. urticæ*; the abdomen is black, with a long style.

\* **CERASI.** Wings white, with unequal brown bands; the lower ones connected outwardly. It inhabits this country, and is found in the kernels of cherries. Body black; front testaceous.

**ANNONÆ.** Blue; wings white, with four black bands; the lower ones connected outwardly. It inhabits the American islands, and is small. The front fulvous; crown blue; legs black.

**CRAX.** Cinereous; wings white, with three unequal black bands; legs testaceous. It inhabits the East Indies, and is the size of the *M. urticæ*. The abdomen is varied with cinereous and black, and ending in a long style; the wings have three bands at the base.

\* **CARDUI.** Black; wings white with a flexuous brown band. It inhabits Europe, in the flowers of the thistle.

\* **SYNGENESIÆ.** Black; wings white with three abbreviated black bands and spot at the tip: it is a small fly, and inhabits Germany.

**TUFFLAGINIS.** Yellow; wings white with four brown bands. It inhabits Denmark, on flowers; abdomen cinereous, with ferruginous style tipped with black.

**FURCATA.** Cinereous, with a testaceous tail; wings brown, dotted with white. It inhabits the American islands; the eyes of this insect, which is small, are green.

\* **SOLSTITIALIS.** Wings white with four connected black bands; scutellum yellow. It is an inhabitant of this country, and has been described and figured by Mr. Donovan. The head is pale; body blueish black; abdomen ending in a long style; wings with a brown outer margin connecting the four bands; legs yellow, thighs black.

**COSTALIS.** Blue; wings white with two black costal spots. It inhabits the South American islands, and is small.

**LYCHNIDIS.** Black with yellow head and legs; wings black, the border streaked with white. It inhabits Kiel.

\* **ONOPORDINIS.** Ferruginous, with a yellowish scutellum; wings with brown marks and tip. It inhabits Europe, and is described in Donovan's Eng. Inf., head and legs pale.

**CENTAURÆ.** Black; head and legs yellow; wings with brown marks and tip. Inhabits Kiel, and resembles the last.

**SCABIOSÆ.** Yellow; disk of the wings sinuate, brown and dotted with white. It inhabits France, and is large.

\* **HIERACII.** Wings brown, varied with white, on the thicker margin three black spots, with a white pupil. It inhabits England, and is found among flowers; the body is grey with a few brown dots; thorax grey with two brown dots on the shoulders, four in the middle and two behind; the abdomen is grey with four black bands, the two first interrupted; legs yellow.

**MINUTA.** Yellow; thorax black on the back; abdomen with two black streaks and two dots behind. It inhabits Kiel, and is characterized as very small.

**ÆQUINOCTIALIS.** This species is glabrous, black; testaceous; eyes chestnut-brown, legs long. It inhabits South America; the body is long and narrow.

**CIBARIA.** Smooth, with raised stemmata; the abdomen is cinereous, hooked; the legs are long. It is found very much in kitchens in divers parts of Europe.

**TERRESTRIS.** Brown; thorax with a brown dot without the lines; abdomen striate beneath. It inhabits Sweden, and feeds on the ground.

**SALTUM.** Wings white with a brown rib and terminal dot; body yellow; head blackish behind. This is an European insect.

**ARNICÆ.** Wings hooked, grey spotted with black. It inhabits Europe, on the disk of radiate flowers; particularly the *Arnica montana*.

**SONCHI.** Wings hyaline, with a black marginal spot; the eyes are green. It inhabits Europe, on the receptacles of the *Sonchus arvensis*.

**SUBCUTANEA.** Wings white with flexuous brown bands; eyes green. It inhabits Europe, under the leaves of the heracleum.

**RUFIVENTRIS.** Thorax cinereous; abdomen rufous, with a black spot at the base, with two brown spots and brown hind margin.

**SETOSA.** Black; abdomen bristly, with a pale spot on each side at the base. This and the next thirty-seven species are described generally as inhabiting Europe.

**VERSIPELLIS.** Black; the three first segments of the abdomen on each side are changeable reddish-grey.

**PULLA.** Black; abdomen glabrous, greenish-black. It inhabits Europe.

**BRUNNEA.** This is entirely of a chestnut colour.

**NIGRIPILIS.** Cinereous, with black bristles; legs testaceous, black at the ends.

**NIGRIPES.** Cinereous; wings yellowish at the base; legs black.

**TIBIALIS.** Cinereous; front tip of the thighs and shanks testaceous.

**VERSICOLOR.** Black, with a changeable grey gloss.

**PICEA.** Piceous, glabrous; legs black.

**CRASSIPES.** Black, rough; thighs thick.

**LEUCOSTICTA.** Black; wings with numerous white dots.

**RUFICAPILLA.** Cinereous, with a rufous crown and testaceous shanks.

**OCHROPTERA.** Black; front white; wings yellowish; shanks ferruginous.

**SUBULATA.** Piceous; abdomen subulate; wings with a ferruginous spot; shanks pale.

**CONICA.** Cinereous; abdomen conic; legs brown testaceous.

**ABRUPTA.** Cinereous; wings with three abrupt testaceous bands.

CHRYSO-



**CHRYSOCEPHALA.** Crown ferruginous; back of the thorax and linear abdomen black; wings white, with two brown bands, the tip brown with a white spot.

**FLAVESCENS.** Yellowish-grey with a ferruginous crown; head and legs yellow; wings white with four yellow bands.

**LEUCOPIS.** Blackish, with a white face; tip of the scutellum subtestaceous; abdomen changeable grey.

**CYLINDRICA.** Blackish; abdomen cylindrical, changeable grey.

**TERES.** Piceous, glabrous, cylindrical; legs yellow.

**SETICORNIS.** Reddish-brown with brown eyes and wings.

**SORDIDA.** Black; wings brownish, with hyaline thinner margins.

**TRICOLOR.** Cinereous; wings brown; legs black.

**DEPRESSA.** Brown with ferruginous legs; abdomen depressed.

**QUADRICOLOR.** Polished; thorax blue; abdomen green; thighs black, the tip and shanks yellow.

**SQUALIDA.** Blackish; abdomen cylindrical, cinereous, with a black dorsal line.

**LATIPES.** Yellow; abdomen clavate; hind-thighs yellow; shanks with a white ring.

**DESPECTA.** Testaceous with a cinereous back; segments of the abdomen brown at the base.

**LITURATA.** Grey; wings with a ferruginous spot; legs pale.

**TRIPUNCTATA.** Blackish; crown with three black dots each side; thorax pale, cinereous.

**LEUCOPTERA.** Piceous, glabrous; legs ferruginous; wings white.

**GLAUOPTERA.** Piceous, glabrous; wings glaucous.

**9-PUNCTATA.** Thorax black; abdomen pale grey, with nine black dots.

**PICATA.** Thorax black; abdomen piceous, glabrous; ends of the hind-legs thick.

**9-MACULATA.** Yellow; wings with six blackish spots, and three at the tip.

**RUBRIPES.** Black, with ferruginous legs.

**MELANOCORYSA.** Yellow, with a black dot on the crown; thorax with three longitudinal black stripes.

\* **GRANDITARSA.** Glabrous; thorax black-bronze; abdomen ferruginous, tipped with black. It inhabits England.

**APIFORMIS.** Hairy, black; base of the thorax yellow; abdomen with a yellow belt; the tail whitish. It inhabits Austria.

**ARGYROSOMA.** Hairy, black, with a silvery front; abdomen with silvery bands. It inhabits Vienna.

**FULVIVENTRIS.** Blackish; abdomen with yellow down beneath; wings dotted with white. It inhabits Vienna.

**CLAVICRUS.** Yellow, naked; eyes green; hind-thighs clavate. Inhabits Austria.

**5-PUNCTATA.** Cinereous; wings with a dot at the tip, one at the inner margin, and three at the outer. Inhabits Austria.

**STRICTICA.** Yellow; thorax and abdomen with four lines of black dots; wings white, with a yellow margin and three bands. It inhabits Vienna.

**POCCIOPTERA.** Wings reddish-brown, variegated with white. Inhabits Austria.

**LINZENSIS.** Black; front red, the margin with two anastomosing brown spots. It inhabits France.

**NASUTA.** Yellow; thorax with about five black lines; abdomen with four black bands. It inhabits France.

**LAMED.** Wings hyaline, the outer margin varied with brown, the inner margin marked with a brown Hebrew lamed. It inhabits Austria.

**MILIARIA.** Yellow, with black eyes; wings yellow, with a triple brown spot and numerous dots. It inhabits Europe.

**CYANOPHTHALMIA.** Hairy; eyes violet, with six purple bands; legs with a white ring. It inhabits Austria.

**METICULOSA.** Glossy-black; shanks rufous, with a black band, the hind ones curved. It inhabits Austria.

**MERULINA.** Glossy-black, with red eyes; wings hyaline, immaculate. It inhabits Austria.

**RESINELLÆ.** Black; scale of the poisers ferruginous; abdomen with two thin white belts.

**CORNUTA.** Yellowish, with two horns sending out three branches from the upper side; wings hyaline, spotted with brown. It inhabits Carniola.

**IRIDATA.** Thorax splendid green; abdomen lucid lanceolate, violet-brown. It inhabits Carniola.

**CANNABINA.** Thorax bronzed; abdomen pellucid yellow, with alternately narrower black bands. It inhabits Carniola.

**LUPINA.** Thorax cinereous, with four interrupted black lines; abdomen subtestellate, the sides diaphanous. It inhabits New Zealand.

**TESTACEA.** Scutellum two-toothed; body testaceous; first segment of the abdomen brownish. It inhabits South America.

**ERRANS.** Scutellum two-toothed, black; abdomen black, the second and third segments with white sides. It is less than the last.

**CHAMÆLEON.** Scutellum two-toothed, yellow; abdomen black, with three triangular yellow spots on each side, and one at the end. It inhabits Europe. This is one of the most remarkable species: it is a large black fly, with a broad, flattish abdomen, having the sides of each segment yellow, forming so many abrupt semi-bands across that part. It proceeds from an aquatic larva, of very considerable size, measuring two inches and a half in length, of a somewhat flattened shape, and of a brown colour, with a narrow or slender front; the body widening by degrees towards the middle, and from thence gradually tapering to the extremity or tail, which is terminated by a circle of radiating or diverging hairs. This larva is common in stagnant waters, during the summer months, and passes into its chrysalis state without casting its skin, which dries over it, so as to preserve the former appearance of the animal in a more contracted form.

**SPLENDENS.** Scutellum two-toothed; body covered with rich gold down; abdomen with black bands. It inhabits Spain.

**FURCATA.** Scutellum two-toothed, black, edged with yellow; abdomen black, the sides spotted with yellow. It inhabits Germany.

**EPHIPPIUM.** Scutellum two-toothed; thorax rufous and spinous on each side. It inhabits Europe.

**CRUCIS.** Scutellum two-toothed, black; abdomen black, with two lateral yellow spots and tip. It inhabits the South American islands.

**FLAVISSIMA.** Scutellum two-toothed; body black; abdomen rufous, with a longitudinal black line. It inhabits Italy.

**MICROLEON.** Scutellum two-toothed; abdomen black, with lateral white streaks. It inhabits Europe.

**STRIGATA.** Scutellum two-toothed; abdomen black, with white streaks beneath. It inhabits Italy.

**CYANEA.** Scutellum two-toothed; body blue; head vermicular white. It inhabits Cayenne.

**PALLIPES.** Scutellum two-toothed; abdomen above black, the



## MUSCA.

the edges of the segments whitish each side. It inhabits North America.

**MUTABILIS.** Scutel two-toothed; body grey, downy; abdomen black at the base; rib of the wings ferruginous. It inhabits Cayenne.

**FASCIATA.** Scutel two-toothed; body black; abdomen with two white streaks above, beneath silvery. It inhabits Cayenne.

**ARGENTATA.** Scutel slightly two-toothed; body black; abdomen covered with silvery down and yellow lateral spots. It inhabits Saxony.

**TIGRINA.** Scutel two-toothed; body black; abdomen rufous beneath. It inhabits the waters of Denmark.

**HYDROLEON.** Scutel two-toothed; body black; abdomen green, with a black line down the middle. It inhabits about stagnant waters of Europe.

**VRIDULA.** Scutel two-toothed; abdomen green, with a black back. It inhabits Germany.

**TYRILINEATA.** Scutel two-toothed; abdomen greenish-yellow; thorax with three black stripes; abdomen with black marks. It inhabits Europe.

**HYPOLEON.** Scutel two-toothed, yellow; thorax black edged with yellow; abdomen black, with five yellow spots. Inhabits Europe.

**MUSCARIA.** Scutel two-toothed, yellow; body black; margin of the abdomen spotted with yellow. It inhabits Italy.

**MINUTIOR.** Scutel two-toothed; body black; segments of the abdomen edged with white. It inhabits Tranquebar.

**MELANOPIS.** Scutel two-toothed; body testaceous, with black eyes; second and third segments of the abdomen with a yellow spot on each side behind. It inhabits Europe.

**NIGRICANS.** Scutel two-toothed; black with yellow teeth; abdomen black; the hinder margins of the segments whitish beneath. This is an European insect.

**4-LINEATA.** Scutel four-toothed; body black; abdomen with four white lines. This is found in Sierra Leona.

**CLAVIPES.** Scutel six-toothed; body black; abdomen ferruginous. Inhabits Sweden; wings brown; legs rufous.

**\* 6-DENTATA.** Scutel six-toothed; thorax bronzed; abdomen ferruginous. It is an inhabitant of this country; a specimen is found in the museum of sir Joseph Banks. The thorax is shining bronze; scutel with six black teeth; abdomen long, flat above, and pubescent; wings whitish, with a black marginal spot; legs yellow, the hind ones long.

**\* CHALYBEA.** Scutel six-toothed; thorax steel blue; abdomen black. This is an English fly; the wings and poisers are black; legs testaceous, the ends black and clavate.

**\* SIMILIS.** Scutel six-toothed, shining green-blue; abdomen steel-blue. It inhabits England; wings ferruginous, with a brown dot; legs black; poisers white.

**\* VALLATA.** Scutel six-toothed; abdomen and thighs yellow. It is found in England. Wings subferruginous, flat, incumbent, with a brown dot in the middle of the rib; poisers yellow; shanks near the tip and tarsi brown.

**c.** Sucker with a single bristle and univalve sheath; antennæ seated on a common petiole; in this sub-section there is but a single

### Species.

**UNIVALVIS.** Black; front yellow; thorax spotted with yellow; abdomen with three yellow streaks. It inhabits Kiel and Barbary.

**d.** Sucker with three bristles, without sheath; feelers placed at the base of the sucker.

### Species.

**\* SCOLOPACEA.** Cinereous; abdomen yellowish, with three rows of black dots; wings clouded. This is found in other parts of Europe as well as in this country.

**TRINGARIA.** Cinereous; abdomen yellowish, with three rows of black dots; wings immaculate; thorax of one colour. It is found in the woods of Europe.

**VANELLA.** Cinereous; thorax lineate; abdomen testaceous, immaculate; wings sub-testaceous. It inhabits Denmark, and resembles the last.

**ARDEA.** Black; margin of the abdomen spotted with grey; wings immaculate; shanks testaceous. It inhabits Italy.

**VERMILEO.** Cinereous; abdomen with three rows of black dots; wings immaculate; thorax spotted.

The *Musca vermileo* is a middle-sized fly, of a somewhat lengthened form, with a distant resemblance to a *Tipula*; it is of a dull yellow colour, with transparent wings; the thorax marked above by two black lines, and the abdomen by triple rows of black spots. The larva measures about three quarters of an inch in length, and is of a pale yellowish-grey colour, slender or sharpened in front, and growing gradually broader towards the tail. It is found in the southern parts of Europe, and is not uncommon in some districts of France; it is remarkable for practising a method exactly similar to that of the *Hiemrobis formicaleo*, in order to obtain its prey; excavating a circular pit or cavity in the dry sand; concealing itself, waiting the arrival of any small insect which may happen to fall into it, and after absorbing its juices, throwing out the exhausted remains to a considerable distance from the cavity. This larva seems to have been first observed and described by Reaumur, in the Memoirs of the French Academy for the year 1752. It assumes the state of a chrysalis by casting its skin, which of itself rolls to the hinder part of the body: the chrysalis is of a dull reddish colour, and is rounded or clubbed at the upper part, suddenly tapering from thence to the extremity, and after lying nine or ten days, it gives birth to the perfect insect.

**\* LINEATA.** Lineate; abdomen black; wings hyaline, with a brown spot and tip. This is an English fly; the antennæ are cylindrical, incurved, longer than in others; the fore-legs are long and black.

**FUSCATA.** Thorax cinereous, with black lines; abdomen brown; wings with a black marginal spot, in which is a cinereous dot. This is found in Sweden.

**NORWEGICA.** Testaceous; abdomen with five black bands; wings hyaline, with a brown spot at the tip. Inhabits Norway. Thorax gibbous; abdomen cylindrical; legs long and brown; thighs pale.

**TIPULIFORMIS.** Brown; wings white, tip with black. It inhabits Germany.

**CHRYSOPUS.** Thorax ferruginous; abdomen black, with yellow spots on the sides. It inhabits Germany, and is a small fly.

**BICOLOR.** Testaceous; back of the thorax and tip of the abdomen black; wings with a brown spot. It inhabits Italy.

**ADSPERSA.** Abdomen black, the segments edged with white; wings brown hyaline, with black spots. This species inhabits Germany.

**BILINEATA.** Blackish; thorax cinereous, with two black lines; wings hyaline, with black marginal spots. It inhabits Kiel.

**MACROCERAS.** This species is testaceous, with lateral black



# MUSCA.

black spots on the abdomen; antennæ very long. It is found in Germany.

**SUCCINCTA.** Testaceous, with black bands on the abdomen; wings hyaline, with black spots.

**TOMENTOSA.** Black; abdomen covered with gold down; wings white, with a black marginal spot. It inhabits Denmark.

**LINEOLA.** Cinereous; abdomen testaceous, with a black tail, and spots on the back; wings hyaline, with a black marginal spot. This also is an inhabitant of Denmark.

**MAURA.** Deep black, with blackish wings. It inhabits Germany, and is of the middle size.

**NIGRITA.** Black; segments of the abdomen edged with a cinereous down, wings white with a marginal black spot; the legs are black. This species inhabits Italy.

**DIADEMA.** Cinereous; wings white, with a marginal brown spot; legs yellowish. It is common at Leipzig.

**ATRATA.** Black, immaculate; wings hyaline, with a black marginal spot. Inhabits Italy.

**COLOMBASCHENSIS.** Black, with white incisures of the abdomen, shanks, and tarsi. This species is found in many parts of Russia and Siberia, particularly in the spring and autumn. It is extremely troublesome, and often fatal to the cattle which are attacked by it. It insinuates itself into the nobler parts, and destroys the creatures thus affected in the course of four or five hours.

**PAPATACI.** Antennæ, body, and wings hairy. It inhabits Italy; is very small, and very troublesome in the night during the whole summer; the eyes are black, and dotted white; the abdomen is red.

**ACUMINATA.** This is black; abdomen thin, long, and subulate at the end; wings spotted; thighs yellowish-rufous; shanks brownish.

*c.* Sucker with three bristles, and a single valved sheath; antennæ united at the base, and pointed at the tip.

## Species.

**ÆNEA.** Black, downy; abdomen bronzed. Inhabits Germany.

\* **PLEBEIA.** Cinereous, hairy; segments of the abdomen edged with white. This is found in our own country, and other parts of Europe. The hind shanks are ferruginous.

**OCHROPUS.** Hairy, cinereous; segments of the abdomen edged with yellow; legs testaceous. It inhabits Germany.

**MARGINATA.** Black; abdomen conic, the segments edged with white; wings spotted with black. This is found in Italy.

**NOBILIS.** Ferruginous and hairy; abdomen conic, fulvous, with a black tail. This species is found in the woods of Denmark.

**LUGUBRIS.** This species is hairy and black; mouth cinereous; shanks testaceous. It inhabits Kiel. The wings are whitish; and the legs black.

**STRIGATA.** Hairy and black, with two white streaks on the abdomen. This resembles the last, and is found in Germany.

**FLORESCENS.** Black; feelers and fore-legs testaceous. It inhabits Germany.

**ANILIS.** Villous, whitish-grey, with hyaline wings. Found in several parts of Europe.

**PANTHERINA.** Black; back of the abdomen with three white spots, united to as many at the sides. It inhabits Sweden, and is naked.

**DENIGRATA.** Hairy and black; thorax with a white line on each side; wings varied with black.

**MELANOPTERA.** Black; scutellum ferruginous; abdomen

beneath, and angles of the segments, ferruginous. This is said not to be known in Europe.

**FUSCA.** Hairy, yellowish; wings and abdomen brown; the segments with a ferruginous spot on each side.

**POLYZONIAS.** Abdomen ferruginous, with a longitudinal black stripe; wings hyaline, and banded.

*f.* Sucker with four bristles, without sheath; feelers placed at the base of the bristle.

## † Antennæ feathered.

### Species.

**MANIS.** Thorax subtestaceous; abdomen with two black belts.

**MICANS.** Thorax black on the back; abdomen pellucid, with three black belts. It inhabits Italy.

\* **PELLUCENS.** Black; first segment of the abdomen white, pellucid. This is described and figured in Harris's English Insects.

\* **BOMBYLANS.** Downy and black; abdomen rufous at the end. This also is described and figured by Harris.

\* **MYSTACEA.** Downy and black; thorax and tip of the abdomen yellow. This species inhabits Europe, and has been given in Harris's Insects.

**MUSSITANS.** Downy; thorax fulvous; abdomen greenish. Inhabits Kiel.

**LAPPONUM.** Downy, black; scutellum ferruginous; abdomen with three whitish interrupted belts. This is found in Lapland.

**INFLATA.** Head and scutellum yellow; first segment of the abdomen pellucid and yellow. It inhabits Italy.

**APIARIA.** Downy; thorax yellow before; abdomen tipped with white; wings ferruginous at the base. This is an inhabitant of Italy, and resembles the *M. mystacea*.

**ESURIENS.** Body naked; abdomen ferruginous, pellucid. It inhabits the American islands.

\* **INTRICATA.** Downy, yellowish; abdomen black; the tip and joints of the legs are white.

**CRASSA.** Naked, black; hind thighs rufous, and one-toothed. It is an inhabitant of Tranquebar.

**BOMBYLIFORMIS.** Downy, yellowish; shanks white at the base. It inhabits Germany.

**VACUA.** Naked; thorax with yellow lines; abdomen pellucid, yellow, with black belts. It inhabits the American islands, and is a small fly.

**OBESA.** This species is likewise naked; wings with two brown spots; body bronze. It inhabits America.

**PLUMOSA.** Black; abdomen rufous behind; thorax hairy, black. This is suspected to be a mere variety of the *M. bombylans*.

## †† Antennæ naked.

### Species.

**PINGUIS.** Body naked; thorax black, spotted with white; abdomen testaceous, with a white band. It inhabits America.

**PENDULA.** Downy; thorax black, with four yellow lines; abdomen yellow with transverse black lines, connected by a longitudinal stripe.

The *Musca pendula* is a moderately large, and very beautiful insect. Its colour is black, with four bright yellow stripes down the thorax, and three broad interrupted bars across the abdomen. Its larva, which is an inhabitant of stagnant water, is of a remarkable appearance; it is furnished with a tail of great length, composed of a double tube, the interior of which is very slender, extensible at the pleasure of the animal to a vast length, and terminated by a very small



small spiracle. The length of this tube is, therefore, varied in proportion to the greater or smaller depth at which the insect chooses to continue; the tip reaching to the surface, in order to supply the requisite quantity of air. Sometimes great numbers of these maggots are found coiled or twisted together by their tails in such a manner, that it is not easy to separate any one from the rest. The chrysalis resembles that of the *M. tenax*, the remains of the tail being visible in a dried and contracted state. The complete insect is frequently seen on flowers during the autumnal season.

**NATANS.** Downy; thorax with four lines; first segment of the abdomen ferruginous, with an abbreviated white streak. It is found in various parts of Italy.

**VERSICOLORATA.** Downy; thorax with two faint whitish dorsal lines; abdomen rufous, the back is black, but varied with cinereous. It inhabits Germany, and is very like the *M. pendula*.

**\* FLOREA.** Downy; thorax with black bands; abdomen yellow, with a black dorsal line; the segments are edged with black.

**SUBCOLEOPTRATA.** This species is downy; thorax black; wings thicker, cinereous, with two brown flexuous fillets. This is found in Sweden, and is larger than the *M. hemiptera*, the next in the order of description.

**\* HEMIPTERA.** Downy; thorax with a ferruginous border; wings thicker, cinereous, varied with yellowish-brown.

**CRASSIPENNIS.** Downy; thorax yellowish; wings thicker, the disk white with a distant black dot. This is found at Paris, and resembles the last.

**AFFINIS.** Thorax fulvous at the sides; abdomen black. It inhabits France.

**NEMORUM.** Downy; abdomen black, with three white belts, the first segment is yellow at the sides; the legs are black, with white joints.

**CRYPTARUM.** Downy; abdomen brown, with three white belts; the first segments are yellow at the sides; scutellum and legs testaceous. It inhabits Germany.

**AGRORUM.** This is downy and black; scutellum and sides of the abdomen are ferruginous.

**ARVORUM.** Downy; thorax yellowish, with four black lines; abdomen black, with three yellow dots. This inhabits China, and is said to resemble the *M. nemorum*.

**HORTORUM.** Downy; thorax brown, with two pale bands; abdomen with three white bands; hind legs thick and ferruginous. It inhabits the American islands.

**ARBUSTORUM.** Downy; abdomen black, the first segment, and sides of the second, ferruginous.

**PRATORUM.** Downy, black; thorax with two yellow bands, and two dots; abdomen with three yellow spots on each side. It inhabits the American islands.

**SALTUUM.** Naked, black; thorax spotted with yellow; segments of the abdomen edged with yellow; hind thighs toothed. It inhabits Italy.

**\* FRUTETORUM.** Downy, with two yellow lines on the thorax; abdomen ferruginous, with an interrupted black dorsal line. Inhabits England; a little less than the *M. pendula*. The antennæ of this species are ferruginous, with a brown hair; thorax black with ferruginous down, and two yellowish lines on the back; abdomen ovate, with a black crescent at the base and tip, connected by a black line; the second segment black with yellow sides, and three ferruginous dots on the back.

**ERICETORUM.** Slightly downy; thorax bronzed with yellow sides; abdomen fulvous with three black streaks. This is found in Africa; and a specimen is in the museum of Sir Joseph Banks.

**MURORUM.** Downy; abdomen black; the segments edged with white; hind thighs clavate. Found in Barbary.

**\* TENAX.** Downy; thorax grey; abdomen brown; hind shanks compressed and gibbous.

The *Musca tenax* is about the size of a drone, and of a brown colour, with transparent wings, and the first segment of the abdomen is yellowish on each side. It proceeds from a larva of singular appearance, being a long-tailed brown maggot, of rather slow motion, measuring about three quarters of an inch in length, without the tail, which is extensile, and consists of a double tube, the exterior annulated into numerous segments, and the interior terminated by a circle of hairs, surrounding a spiraculum or air-hole. This maggot is seen in muddy stagnant waters, drains, and other places of the like description, and notwithstanding its unpleasing appearance, exhibits, when accurately examined, many particulars well worthy of admiration. The feet, which are seven in number on each side, are wonderfully calculated for enabling the animal to ascend walls or other perpendicular places, to seek some proper situation in which it may undergo its change into a chrysalis, being very broad, and beset on their under surface with numerous small hooked claws; thus giving it the power of clinging with security during its ascent.

Of this larva a particularity is stated, on the authority of Linnæus, which, if true, may indeed well be numbered among the miracula infectorum; viz. that being a frequent inhabitant of the turbid pulp used in the operation of paper making, it is often exposed to the action of the wooden mallets used in the process, as well as squeezed in the strongest presses; and yet survives uninjured by these seemingly destructive operations.

This larva commonly changes to a chrysalis about the end of August; the skin contracting, and drying round the body, and the tail continuing in a shrivelled state. After thus remaining about the space of a fortnight, it gives birth to the complete insect, which has so much the general appearance of a drone, that it is very frequently mistaken for such. It is very common during the month of September.

**SETOSA.** Downy, black; hair of the antennæ long and clavate. It inhabits Barbary.

**SEGETUM.** Downy, pale cinereous; abdomen black, with two yellowish spots at the base. This is likewise found in Barbary, and is of the same size as the *M. tenax*.

**TRILINEATA.** Downy; thorax pale, with black lines; abdomen black, with an interrupted ferruginous band at the base. This is a New Holland fly, but a specimen is preserved in Sir J. Banks's museum.

**4-LINEATA.** Thorax yellowish, with four bronzed lines; abdomen ferruginous, the tip black, with a white streak. It inhabits Tranquebar.

**5-STRIATA.** Thorax bronzed, with five white lines; abdomen ferruginous; the tip black, with a white streak. This is an inhabitant of the East Indies.

**5-LINEATA.** Downy; thorax with five alternate white and black lines; abdomen black, the segments white at the base. This species is found in Africa: Sir Joseph Banks has a specimen of it.

**FUSIFORMIS.** Downy, thorax yellow, with a black band; abdomen black, with a yellow base and fulvous tip. This is found in France, and is the size of *M. myiæta*, already described.

**OESTRACEA.** Black, with a whitish scutellum; abdomen yellowish at the tip.



## MUSCA.

**ASILIFORMIS.** Thorax downy, yellowish; abdomen black; the two first segments yellowish. It inhabits Germany.

\* **LUCORUM.** Downy; thorax grey; abdomen black; the first segment entirely white. It is found in this country and in other European states, chiefly in the fields and gardens.

**FALLAX.** Downy, brown with a yellow front; tip of the abdomen covered with a fulvous down; scale of the poisers white. It inhabits Europe, on flowers.

**SYLVARUM.** Downy, black; last segment of the abdomen covered with yellow down. It inhabits Europe on flowers.

**NIGRANA.** This species is characterised as naked, black, and having blue wings. It is a large fly, and is found in Jamaica.

**CLAVIPES.** Downy, cinereous; thorax with a black band; tip of the abdomen fulvous; hind thighs curved.

**EQUESTRIS.** Downy, cinereous; thorax with a black band; abdomen fulvous; hind thighs and shanks toothed at the tip. It inhabits Italy, and resembles the last.

**FLAVICANS.** Downy, yellowish, immaculate, with black legs. It inhabits Italy, and is less than the *M. equestris*.

**CINEREA.** Downy, cinereous, with a black tail; thorax with a black band. It inhabits Italy.

**BICINCTA.** Black, with two yellow belts on the abdomen; sides of the thorax dotted with yellow. An European fly.

\* **ARCUATA.** Black, with four curved belts on the abdomen; thorax spotted with yellow at the sides. This species is found in our own country.

**CINGULATA.** Downy; abdomen black, the first segment white at the base, the rest with white dots. It inhabits New Zealand. To be seen in the museum of sir Joseph Banks.

**ZONELIS.** Downy, black, with cinereous tail, front and fore-part of the thorax; first segment of the abdomen whitish. This species is found in China.

**ERRANS.** Downy; thorax cinereous with a black band and scutellum; abdomen black, the sides yellow at the base. It inhabits China.

\* **MUTABILIS.** Downy; thorax immaculate; abdomen black with a changeable grey gloss. It inhabits the meadows of different parts of Europe.

\* **DEVIA.** Downy, with a blueish thorax; abdomen dull violet.

\* **SEGNIS.** Naked; thorax bronzed; abdomen ferruginous, tipped with black; shanks white. This as well as the last inhabits our own country, and other parts of Europe, on flowers.

**VOLVULA.** Downy, black; abdomen cylindrical, blue; antennæ and legs rufous; hind thighs thick. This is found in France, and is of the same size as the *M. segnis*.

**PIGRA.** This is nearly naked and black; abdomen ferruginous with a black tail; hind thighs clavate. It inhabits Germany.

**LUNATA.** Downy; thorax cinereous; abdomen with white crescents; the base rufous, and tip black; hind thighs thick. Found in Barbary.

\* **FEMORATA.** Downy; thorax slightly bronzed; hind thighs clavate. It inhabits the flowers of this and other countries of Europe.

**SPINIPES.** Downy; abdomen black with white lines, the first segments rufous; hind thighs toothed. It inhabits France.

**ANNULATA.** Downy; abdomen black, the segments edged with white; hind thighs clavate and toothed. Found in France.

**DENTIPES.** Naked; thorax black, with four white

lines; abdomen clavate; hind thighs thickened and toothed. This species inhabits Cayenne.

\* **CONOPSEA.** Naked, black, with lateral lines on the thorax, abdomen with three yellow bands. This is found in England and other parts of Europe. The wings are white, with a black thicker margin.

\* **ICHINEUMONEA.** Cylindrical, black; front, hind part of the thorax, and legs ferruginous. It is found on flowers in this country and other parts.

**BICOLOR.** Black; abdomen rufous with a black base and tip. It is found in Barbary, and very much resembles the last species.

\* **SPHEGIA.** Black with rufous legs. It inhabits England: a specimen is preserved in the museum of sir J. Banks.

**CLAVATA.** Naked and black; abdomen clavate, with three yellow spots on each side. Found in the West India islands.

**CYLINDRICA.** Naked, black; wings blackish, the thinner margin spotted with white. Inhabits, like the last, the West Indies.

**VESICULOSA.** Naked, black; abdomen clavate, the tip testaceous and vesicular. It inhabits Italy.

**ELONGATA.** Naked; thorax bronzed; abdomen clavate, black, with two yellow bands. It inhabits Denmark, on flowers.

**PODAGRICA.** Naked; thorax bronzed; abdomen with two yellow bands; hind thighs clavate. It is found in Denmark.

**CRABRONIFORMIS.** Downy; thorax variegated; abdomen yellow, the two first segments tipped with brown. This is an inhabitant of Madeira, and a specimen of the species is in the museum of sir J. Banks.

**DIOPHTHALMA.** Naked; thorax spotted; abdomen with six yellow belts; hind thighs toothed. It inhabits Europe.

**APIFORMIS.** Downy; thorax black with white dots and lines; abdomen yellow with black belts. It inhabits Germany.

\* **VESPIFORMIS.** Naked; thorax black, spotted with yellow; abdomen with yellow belts uniting at the sides. This is found in our own country, and other parts of Europe. And independently of the specific character just given, its thorax is marked with a lateral interrupted yellow line; scutellum black, edged with yellow bands on the abdomen uniting in pairs.

\* **FESTIVA.** Naked; thorax black with yellow lateral lines; abdomen with four interrupted yellow belts. Is found chiefly in gardens, here and elsewhere in Europe.

**LAETA.** Naked; thorax black, with yellow lateral lines; abdomen with four yellow belts, the first interrupted. It inhabits Kiel.

**RUFICORNIS.** Downy; thorax brown with grey lines; abdomen bronzed, wings with two brown spots. It is found on flowers in different parts of Denmark.

**SEMIRUEA.** Black; abdomen ovate, with a broad ferruginous tip. Found in Germany.

**CALCARATA.** Downy; thorax brown; abdomen black with whitish lateral spots; hind thighs toothed.

**FLAVICORNIS.** Downy; obscure bronze; antennæ and shanks yellowish. It inhabits Germany.

**ÆNEA.** Downy; black-bronze; joints of the legs white. It inhabits Germany.

**FUNESTA.** Thorax downy; obscure bronze; abdomen black with three pale cinereous bands. It inhabits Italy.

**MELANCHOLICA.** Thorax bronzed with white lines; abdomen black, with cinereous streaks. It inhabits Italy.

SEPUL-



## MUSCA.

**SEPULCHRALIS.** Downy, blackish; abdomen shining-black. Found in Sweden.

**TRISTIS.** This species is nearly naked; thorax black, with five paler lines; the abdomen is bronzed. Found in Germany.

**LUGUBRIS.** Black, immaculate; wings white with a brown spot. It inhabits Denmark.

**CÆMETERIUM.** Black-bronze; abdomen depressed, shining-black; wings blackish.

**METALLINA.** Shining black-bronze; antennæ black. Found in Germany.

**SUBSULTANS.** Glossy-black; wings white and immaculate. This is found in Germany.

**GLAUCIA.** Slightly downy, black; abdomen with a pellucid base, and two whitish interrupted belts. Found in Europe.

**NOCTILUCA.** Slightly downy, black; abdomen with two pellucid spots on the first segment. This inhabits Europe, chiefly in gardens.

\* **GLOBOSA.** Slightly downy; thorax ferruginous on the fore-part; abdomen sub-globular, pale, tip with black. It inhabits this and other European countries. The mouth is white; front ferruginous, with a black line; thorax ferruginous before, and black behind; legs black; wings white.

\* **RIBESII.** Nearly naked; thorax immaculate; abdomen with four yellow belts, the first interrupted. Found usually among the *Aphides ribis*.

**BIFASCIATA.** Downy; thorax bronzed; abdomen black, with two yellow belts, the first interrupted.

**PYRASTRIS.** Nearly naked, black; thorax immaculate; abdomen with three pair of white recurved lunules. Found among the *Aphides pyri*.

**THYMASTRIS.** Downy; thorax slightly bronzed; abdomen black, with three whitish bands; the second is interrupted. It inhabits Germany, on flowers.

**TRANSFUGA.** Downy; abdomen black, with three pair of whitish lunules.

**SALVIÆ.** Naked, yellow; back of the thorax and edges of the abdominal segments black. Found in Sierra Leona.

**COROLLÆ.** Downy; thorax bronzed, with a yellow lateral line and scutellum; abdomen depressed, black, with six yellow spots and tip.

**UMBELLATARUM.** Nearly naked; thorax blueish; abdomen black, with three white spots at the sides, and two streaks. It is found in Germany.

**ABDOMINALIS.** Black; abdomen rufous, with a black tail; antennæ long, with a snowy hair. It inhabits France.

**ROSARUM.** Naked; thorax black-bronze; abdomen black, with two yellow spots. It is found among flowers in Germany.

\* **MELINA.** Naked; thorax slightly bronzed, immaculate; abdomen with eight yellowish spots. It inhabits Europe, and is found among various species of *Aphis*.

\* **MENTHASTRIS.** Naked, black; thorax spotted; abdomen with four yellow belts; scutellum yellow. This, like the last, is found among various kinds of *Aphis*.

**SCALARIS.** Nearly naked, shining-bronze; abdomen with six fulvous spots.

\* **SCRIPTA.** Naked; thorax with yellow lines; abdomen linear, with yellow bands. It inhabits Europe.

**OCYMI.** Shining black-bronze; abdomen rufous, with a bronzed base and tip. It inhabits Germany.

**DISPAR.** Naked; thorax black, with a yellow lateral

line; abdomen variegated with yellow and black. It inhabits South America on the *Parthenium hysterophorum*.

**NECTAREA.** Downy; abdomen yellow, the margins of the segments black, with a yellow band.

\* **ALBIMANUS.** Downy; thorax bronzed; abdomen elongated, black, with white dots. It inhabits England. A specimen is in the museum of Sir J. Banks.

**DIMIDIATA.** Naked, deep black; wings black at the base. Inhabits the South American islands. This is a small fly.

**PIPIENS.** Naked; abdomen spotted with white at the sides; hind thighs clavate and toothed.

**GIBBA.** Variegated with black and yellow; head minute and orbicular. Found in Barbary.

**GIBBOSA.** Downy, brown; abdomen subglobular, black, with four white belts; scales of the poisers inflated. This inhabits Europe.

**ORBICULA.** Naked, black; abdomen tipped with white.

**ERRATICA.** Nearly naked; thorax immaculate; scutellum ferruginous; abdomen with three whitish belts.

**GROSSIPES.** Glabrous, black, with pale eyes; legs piceous, the hind ones large. It inhabits Europe, and is very small.

**SALTATRIX.** Naked, yellow; abdomen brown above; thorax with three brown lines. This is an European insect, and it skips like a Cicada.

**ÖCHROLEUCA.** The front of this fly is white; crown and thorax yellow; the abdomen of an ochre-yellow; legs black; hind thighs thick; wings white, with a brown band. It inhabits Europe.

**FULVA.** Thorax fulvous; abdomen black, with fulvous down, beneath ferruginous on each side; thighs black; shanks yellow, the hind ones black towards the tip; wings white, with a black band.

**RUBIGINOSA.** Black; scutellum yellow; wings with white veins; the first two segments of the abdomen have a ferruginous band at the base; thighs ferruginous, the hind one thick and black towards the tip; shanks brown, the hind ones curved.

**LEUCOCEPHALA.** Head white, according to its name; eyes coppery, dotted with brown; thorax cinereous, with four black bands; abdomen blue-black.

**VULGA.** Oblong and black, with rufous legs; hind thighs long and thick, with black curved shanks.

**MELANOCHRYSA.** Black; second and third segments of the abdomen fulvous.

**ENEA.** Thorax slightly bronzed; abdomen black with two cinereous bands; legs yellow, thighs black at the base.

**INTERRUPTA.** Thorax slightly bronzed; abdomen black with a yellow band on the first two segments; the first of which is interrupted; the legs are yellow; the ends of the hind ones brown.

**NEVIA.** Black; thorax spotted; abdomen with four interrupted bands; wings with a brown marginal spot.

**GIRYSOZONIAS.** Thorax slightly bronzed with two obsolete bands; scutellum pale; abdomen with four interrupted bands and tip.

**LUTEOLA.** Black; second segment of the abdomen yellow on each side.

**LINEOLATA.** Black-bronze; crown with impressed transverse lines on each side; abdomen depressed.

**PRASINA.** Thorax black; abdomen greenish-black, a little downy and depressed.

**PUSILLA.** This is a minute species, black with a downy



downy front; abdomen depressed, wings white; legs rusty-brown.

**ATROPOS.** Slightly downy; thorax whitish, with three black spots; abdomen black, with interrupted yellow bands and margins of the segments. This is found chiefly in Austria.

**ALTERNATA.** Thorax green-black; scutell yellow; abdomen black, with yellow bands alternately larger, the first interrupted. This also is an Austrian fly, as are the five that follow it.

**MURINA.** Grey; thorax with three black lines; wings spotted with brown.

**ELEPHANTOPUS.** Black; abdomen ferruginous at the base; hind thighs thick.

**OBFUSCATA.** Black; base of the shanks and antennæ fulvous-brown.

**DIZONIUS.** Naked, black; abdomen with two yellow belts; the fore-legs yellow.

**LARVATA.** Silvery testaceous; head inflated, snowy; legs annulate with black; wings brown hyaline spots.

**MONOCULUS.** Eyes large, very approximate; thorax brown; abdomen pale-gold. This is found in South America.

**DEPRESSA.** Abdomen roundish, and depressed with three yellow bands; the first and third interrupted.

**AMERICANA.** Thorax pale, with a black band; abdomen reddish on the back, and tipped with black; the body of this fly is very large, and covered with down.

#### B. The Flies in this Division are without Feelers.

a. Sucker with a single recurved bristle without a sheath; the antennæ are inserted at the base of the proboscis.

##### Species.

\* **ULIGINOSA.** Black; abdomen snowy, tipped with black. It is found in Germany and in this country. The proboscis is cylindrical, grooved on the back for the reception of the bristle; there is a white dot in the front; the poisters are white, and legs pale.

\* **MARGINATA.** Black; margin of the abdomen and shanks whitish. This species is common in France and England; and is described as having, independently of its specific character, a black head. The antennæ united at the base; thorax black-bronze; abdomen depressed, with a few faint whitish spots on the back; the thighs are black, and the wings are white.

**VILLOSA.** Black, with cinereous hairs; segments of the abdomen with a lateral whitish margin. Found in Hungary.

**PUNCTATA.** Black, with three lines of yellowish dots on the abdomen. This species inhabits Barbary.

**MINOR.** Black; abdomen snowy, with a black spot at the base. It inhabits Tranquebar.

**TARDA.** Smooth and black; thorax slightly bronzed; legs subtestaceous.

**FORMOSA.** Thorax green; abdomen blue and dilated.

b. Sucker with a single bristle, without a sheath; antennæ approximate, with an ovate compressed club.

**FILATA.** Black; second segment of the abdomen pellucid at the sides; hind thighs ferrate. It is found in South America.

**LEUCOPUS.** Abdomen black, the edges of the segments pellucid; ends of the legs white. It inhabits South America, and is about the size of a wasp.

**BILINEATA.** Black, with two white lines on the thorax; shanks ferruginous at the base. It inhabits New Zealand. A specimen is in the museum of Sir J. Banks.

VOL. XXIV.

**NECTARIVORA.** Black; antennæ cylindrical, perfoliate; wings white. This, wherever it is met with, is found on the flowers of fruit-trees; where it remains the whole day extracting their nectar. It has a small and oblong body.

**MUSCA, Crabroniformis** and *Rapax*, names sometimes used for the hornet-fly. See **ASILUS**.

**MUSCA Vespiformis**, the wasp-fly. See **ASILUS**.

**MUSCA**, in *Astronomy*. See **APIS**.

**MUSCA**, in *Antiquity*, a designation given to parasites, buffoons, &c. who intruded themselves into the company of those that despised them, or found means to be admitted to entertainments where they were not welcome.

**MUSCADINE**, a rich wine, of the growth of Provence, Languedoc, Cividat, &c.

The word, as well as the liquor, is French: some fetch its original from *muske*, the wine being supposed to have a little of the smell of that perfume: others from *musca*, a fly, because the flies are extremely fond of its grapes; as the Latins had their *vinum apinum*, so called *ab apibus*, from the bees which fed on the grapes it was made of.

The way of making muscadine at Frontignac is as follows: they let the muscadine grapes grow half dry on the vine, and, as soon as they are gathered, they tread and press them immediately, and run up the liquor, without letting it stand and work in the vat; the lees occasioning its goodness. Phil. Trans. abr. vol. ii. p. 657.

**MUSCÆ** is used for officers of the popish inquisition, who feign themselves of the sect of the prisoners, in order to draw a confession of their opinion from them, and thereby betray them; there being persons placed to overhear their conversation. See **MUSCA**.

**MUSCÆ Volitantes**, in *Optics*, dark irregular veins and spots, seeming to fly before the eyes of many people, especially on looking at bright objects, such as white paper, the sky-light, the candle, &c. These have only the appearance of cobwebs, sometimes that of smoke, dust, &c. The resemblance of many of these spots to flies has given them the name of *musca volitantes*, q. d. *flies flying about*.

It is not easy to account for this phenomenon. Some will have its cause to lie in the aqueous humour; others in the retina. Monf. de la Hire's account of them is this: they are of two sorts; some permanent, which, in fixing the eye upon a point of an object, appear always fixed in the same situation to that point; others seem to fly about, and to change their situation, though the eye be fixed. The shapes of both sorts are changeable: those of the first sort are commonly like a dark spot upon a white ground; those of the second sort appear like the knots of a deal board, some parts of them being very clear, and surrounded with dark threads; they are also attended with long fillets of irregular shapes, which are bright in the middle, and terminated on each side by parallel black threads. On fixing the eye upon an object, they appear to descend gradually, especially after shaking the head suddenly.

The spots that appear fixed in respect to the axis of the eye, must, for that reason, be caused by some disorder in a corresponding part of the retina, or in some part of the vitreous humour lying pretty close to the retina. For an opacity of the coats or humours in any part remoter from the retina, by intercepting some part of the rays of every pencil, could only cause an uniform obscurity or faintness of light in every place of the retina, and not a total defect of it in any particular place. Hence M. de la Hire attributes the cause of these permanent spots to small drops of extravasated blood upon the retina.

But he finds it more difficult to account for the moving spots. When the rays of the sun are transmitted through



a piece of bad glass, and fall upon white paper, the shadows of the little sands, veins, and irregularities in it, appear not unlike those spots. He therefore imagines the aqueous humour is sometimes troubled with some little motherly, rosy substance; some parts of which, by the figures of their little surfaces, or by refractive powers, different from the humour itself, may cast their distinct images upon the retina. He supposed them in the aqueous humour rather than the vitreous; because of its greater fluidity for a freedom of descent, and because they will then appear to descend, as being situated before the pupil, or at least before the place of the intersection of the pencil. But if this heterogeneous mother be in the vitreous humour, it must be lighter than this humour, so that after a sudden shake of the head, it may first descend a little, and then ascend gradually, to cause the gradual apparent descent above mentioned.

These spots are observed to change their figures, sometimes in two or three hours, at other times not in two or three days; and to appear more numerous at one time than another. Dr. Smith's Optics, in the Remarks, art. 27, seq.

We have an instance in the Philosophical Transactions, N<sup>o</sup> 384, of those fixed spots above mentioned. A woman, who, in looking with the left eye only, at three short words in print, could see the extremes, but not the middlemost; and, in looking with the right eye only, at the middle between four short words, could see but three of them; one of the two middlemost being covered with a dark round spot; but in looking with both eyes she could see them all.

Pitcairn denies the cause of the muscæ volitantes to lie in the aqueous humour, and says it is owing to, and a sign of, an internal inflammation of the vessels of the retina. Heister thinks them owing to some obstruction of those vessels; and both these authors, and many others, think them forerunners of a gutta serena, or a cataract; and propose a cure by mercurials and decoctions of guaiacum. See Pitcairn's Elem. Medic. and Heister's Compend. Medic. Practic. Plempius has given a description of the muscæ volitantes, in his Ophthalmographia.

Dr. Porterfield, in the Medical Essays of Edinburgh, observes that these spots may proceed from some little extravasations, various swellings, or other defects in the retina, which, by intercepting the rays, will occasion a defect in the picture; and by consequence a similar and corresponding defect or spot in the object. He observes also, that these spots commonly vanish, or at least become less sensible, when the object is brought nearer the eye, and within the limits of distinct vision. For the rays which are now exactly united upon the retina, by being more crowded, have their force augmented; by which means a sensible impression is made upon the retina through these extravasations. Hence these spots are most sensible to those who have a small pupil, and especially to those who are short or long-sighted. Hence also, in the presbytical eye, the spots which were formerly very sensible, become faint when the object is viewed through a convex glass; for by means of this glass more rays enter the eye, which being united exactly at its bottom, must strike the retina strongly enough to make a sensible impression through these extravasations, which will render the spots obscure.

The learned doctor farther observes, that what has been said with respect to these spots, when occasioned by extravasations, or defects in the retina, will also hold when they are occasioned by a calosity, or any degree of paralysis

or insensibility in some parts of the retina, by which the impulse received from the rays is made less sensible.

But, besides these defects in the retina, there is another cause which may give occasion to these spots, both in the *myopia* and *visus senilis*; and that is, certain small opaque marks in the cornea itself, or any where within the eye, which, by intercepting some of the rays, must occasion a defect in the picture, from which defect a kind of dark spot will be seen in the object. Thus, in the eye of a myops, if there be any opacity in the cornea, or within the eye which intercepts the rays *Bbe*, *Ccd*, and *VL a*, (*Plate XV. Optics*, fig. 18.) there will be a defect in the picture at *e*, *d*, and *a*; from whence also the external appearance will be deficient at the corresponding points *E*, *D*, and *A*; where, by consequence, dark spots will be seen. For it is to be observed, that there is not one point in the picture which is formed by a plurality of rays which meet at the point, but every ray goes to a different point of the picture, both in myopical and presbytical eyes; and therefore, when any of the rays are intercepted, that part of the picture to which such rays belong will not be illuminated, which must occasion a corresponding defect in the appearance of the object. But in the perfect sight, where the rays which come from the several points of the object, are so refracted as to meet again at so many corresponding points in the retina, every point of the picture is formed by a cone of rays, whose base is the pupil; and therefore, though some of those rays be intercepted, yet no part of the picture will be darkened, and consequently no defect will be seen in the object from any such opacity in the cornea, or humours of the eye; unless this opacity be in the back part of the vitreous humour, where the pencil is narrow, and intercepts the whole pencil. This may be proved from the camera obscura, by sticking some small patches on the glass. These will not be perceived if the paper is placed at the due focal distance; but if the distance be greater or smaller, the spots will appear.

The doctor also observes, that these spots are not all of the same kind. He thinks that those which change not their place with respect to the axis of vision, proceed from some defect either in the retina or cornea, or in the vitreous and crystalline humours. As for those which are in constant motion, he supposes them to arise from some corpuscles floating in the aqueous humour.

Besides these dark spots, there is another kind often met with, more bright and luminous than the object itself before which they appear. These spots appear best by looking at distant bright objects, and are always of the same colour with the object. In the middle their colour is clear and strong, surrounded by a dark shady border. They are commonly accompanied with certain irregular veins, which proceed from each spot, and which, as well as the spots themselves, change their order and disposition. These veins are also of the same colour with the object, and being bright and luminous in the middle, are likewise terminated by a dark and obscure edge. These spots change their position with respect to the axis of vision, according as the eye is differently moved, being sometimes in the axis of vision itself, and at other times to the right or left of this same axis; but when the eye is kept fixed in the same direction, they, as well as the dark kind of spots first mentioned, commonly descend gradually.

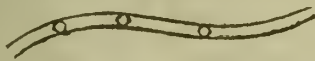
As to the cause of these brighter spots and veins, it seems that, first, they must proceed from some corpuscles within the eye, which are at liberty to change their place, and which therefore must be supposed to float in the aqueous humour. Secondly, seeing these spots always descend when

the



the eye is kept fixed, the corpuscles from which they arise must ascend; and are consequently lighter than the aqueous humour in which they swim. Thirdly, these spots being more bright and luminous than the object, they cannot be occasioned by any opaque corpuscles, which, by intercepting the rays, would cast a shade upon the retina. What therefore bids fairest for producing these brighter spots and veins, is some small, oily, diaphanous particles and filaments, which swim in the aqueous humour before the crystalline; for such, by their lightness, will ascend, when left to themselves; and, by their greater refractive power, produce these luminous spots terminated by dark lines. That oily and sulphurous substances, though less dense than water, have a stronger refractive power, is evident from the observations of sir Isaac Newton. From which it follows, that the rays of light, which pass through these oily particles, will meet sooner behind the crystalline than the other rays; whence in a presbytical eye, the rays of light which come from the several points of the object will not converge to so many other points in the retina, but behind it, by which the picture in the retina will be rendered more dark and obscure; but the rays which pass through these oily grains, by having their refraction increased, will meet nearly at the retina, where they will form small luminous spots, surrounded with dark borders.

But we must here observe, that the same appearances happen to myopes; and this seems difficult to account for from this theory of the learned doctor.

Many medical authors have looked on the muscæ volitantes as forerunners of a cataract, or gutta serena. And we suppose it cannot be denied, that many who have fallen into those terrible disorders have had those appearances before their eyes; and hence they might have been taken for prognostics. But as it is no less certain, that many thousands have the same appearances, and yet preserve their sight very well to the last, there seems to be no great reason to be alarmed about them; and far less should people be running to quacks, and injuring their stomachs and constitutions by ill-judged physic on such occasions. St. Yves denies these appearances to be at all dangerous, and he thinks them owing to the separation of some parts of the retina from the choroid. However, as the disorder is troublesome and alarming to the patient, he advises purgatives from time to time, and miliepedes. We can say, from experience, that neither mercurials, nor sea-water, nor other purgatives, nor miliepedes, nor again Tunbridge or other chalybeate waters, have had any effect towards removing or diminishing these disorders. A greater dose of wine than usual has been known to increase it for a little time; and Plempius has made the like observation. We shall only add, that several of these flying appearances resemble little globules joined by threads, thus ; and these

globules appear in different numbers, and at different distances.

All authors agree, that these appearances change their figure, which is true, in some measure; but from our own observation we can say, that though they seem, on a sudden looking to the sky, or other bright object, to vary in their figures; yet when they begin to descend, they return in one constant figure before we lose sight of them. On the whole, it seems this phenomenon is not yet fully accounted for. The vascular form of most of these appearances, and their resemblances to small veins or arteries, make it difficult to conceive them floating in the humours of the eye; and, on the other hand, their seeming contortions, and change of

figure, on suddenly looking up, or shaking the head, make it no less difficult to conceive them fixed and obstructed capillaries, as many authors suppose.

MUSCARDIN, in *Zoology*. See *VESPERTILIO Pictus*.

MUSCARDINUS. See *MYOXUS*.

MUSCARI, in *Botany*. See *HYACINTHUS*.

MUSCARY, in *Geography*, a town of Hindoostan, in Guzerat; 16 miles S.S.W. of Junagur.

MUSCAT. See *MASCAT*.

MUSCHLAU, in *Geography*, a town of Moravia, in the circle of Brunn; 20 miles S. of Brunn.

MUSCHUOF, a town of Arabia, in the province of Yemen; 8 miles N.W. of Damar.

MUSCI, in *Botany*, Mosses, a most distinct and natural order of plants, of the Linnæan class *Cryptogamia*. The word occurs in the best Latin writers, but its origin is unknown. Ambrosinus deduces it, in his *Phytologia* 113, from *μοσχος*, a young calf or lamb, as well as the young shoot or tendril of a plant, which is not an improbable etymology, and is adopted by Ray. The older botanists have found still more difficulty in defining the nature of a Moss, than in the derivation of its name. Ray says, "Mosses are best distinguished by their minuteness; their less succulent, or even arid, substance; their power of reviving quickly, by immersion in water, after they have been dried; their dry or searcing situations, exposed either to extreme cold or to scorching heat, upon trees, timber, or stones, where no other plants could exist or endure; finally, their mode of producing fruit, which is unlike that of other vegetables." Dillenius, who takes the idea of a Moss in its widest sense, and who has illustrated the whole order, as he understood it, in a most careful and learned manner, has scarcely improved upon the definition of Ray. He speaks of *Musci* as "an inferior tribe of plants, the most imperfect kinds of which consist, either of simple and uniform parts, destitute of flower and seed; or of parts differing among themselves, accompanied with something in the place of flowers and fruits, which is analogous to those organs. The more perfect kinds are composed of parts not so much differing in figure, but are besides furnished with organs containing a pulpy matter, that becomes dry in ripening, and when arrived at maturity flies off, in the form of an extremely subtil powder, serving for the propagation of the plant." Of these "more perfect" kinds, or *Musci* properly so called, we are now to treat. It is therefore needless to detail more of the definitions of Dillenius, which apply to the vast tribe of *LICHENES* (see that article); as well as to *Byssus*, *Confervee*, *Tremella*, &c. all now excluded from *Musci*; nor shall we, except incidentally, speak of the *Hepaticæ*, which the eminent writer last mentioned includes under *Musci*, and which indeed compose the next link in nature's chain. See *HEPATICEÆ*.

Linnæus first circumscribed the natural order of *Musci* within its just limits. It makes the second order of his *Cryptogamia*, and except the genus *Lycopodium*, which does not so properly belong to this order as to the *Filices*, and *Porella*, which is a mistake, he includes nothing but what answers to the most correct and most recent ideas on the subject.

*Musci*, according to the Linnæan idea of the order, as well as the latest discoveries, are defined as follows.

Herb leafy. Corolla like a hood, bearing the style, and covering the capsule, which is closed with a lid.

These plants agree with the *Hepaticæ* in the very extraordinary nature of their corolla, which is formed like a conical hood, and tipped with the style. It is termed the *calyptra*, or veil. But Mosses differ from the order just mentioned



tioned in having the capsule closed with a lid, usually deciduous. Their herbage also consists of a stem with distinct leaves; in the *Hepaticæ* the herbage is frondose. (See *HEPATICÆ*.) Hence the appellation by which the great Hedwig designates the tribe in question, "*musci frondosi*," seems incorrect. Such would have well expressed the *Hepaticæ*; while the Mosses might have been called "*musci foliosi*." It must however be confessed, that there is in Mosses, as well as in the leafy *Jungermannia*, so strict an union between the stem and leaf, that the latter scarcely ever separates from the former by a solution of continuity, as in other classes of vegetables. The old leaves of many mosses indeed break off, but always in an irregular manner, from brittleness caused by decay, and not by the separation of a dying or diseased part from a vigorous living one, as in the leaves of trees and shrubs. Mosses more agree in this particular with some herbaceous plants, especially of those termed monocotyledonous, which also they resemble in their highly vascular or cellular texture, and in the rapidity of their absorption and perspiration. Some of them are no sooner gathered than they begin to wither, as *Polytrichum undulatum*, Engl. Bot. t. 1220, and *Bryum ligulatum*, t. 1449. But though ever so long dried, even for fifty years, or probably as long as their texture endures, they resume their original form, with the greatest facility and exactness, by immersion in water. Some of their minutest parts are the most perfect of hygrometers. See *FRINGE of Mosses*.

The reticulated structure of these diminutive vegetables, like that of the *Jungermannia*, is rather known to us by its beautiful appearance under a microscope, than by any precise notion of its construction or economy. We know scarcely any thing of the form or action of the vessels of their leaves, except that the strong mid-rib, usual in Mosses, though almost universally wanting in *Jungermannia*, is a cluster of parallel tubes, much the same indeed as in the foliage of other plants. But this rib sends off no visible branches, or transverse veins, into the apparently uniform cellular substance of the rest of the leaf, nor is any thing known of the mode of the propulsion of fluids, however rapid, through that substance.

The roots of Mosses, which are fibrous and branched, absorb with equal facility. These are not confined to the base of the plant, where it is fixed to the soil, but are often abundantly protruded, in fine, minutely jointed, branched tufts, from various parts of the stem, which doubtless imbibe nourishment, as they readily do any portion of humidity.

The stem of these plants, always more or less present, is often simple, though frequently branched; either in the usual manner; or by protrusion, or innovation as it is termed, through or beyond their fructification, much the same as in the *Bromelia Ananas*, or Pine-apple, the genus *Pinus*, and some others. The leaves of Mosses however are invariably simple and undivided, their margin only being often serrated, and in one or two instances toothed. (See *Trichostomum lanuginosum*; Engl. Bot. t. 1348.) Their fructification is in some lateral, and in that case always perhaps axillary, but it is more generally terminal.

THE FRUCTIFICATION OF MOSSES is one of the most curious subjects of vegetable physiology. As we detail its history, we shall describe the organs concerned. These are of two kinds, and constitute the flowers of Mosses, though they are neither so determinate in number, circumscribed in situation, nor fenced with appropriate and distinct integuments, as in flowers or blossoms commonly so called. The male, or barren, flowers of the plants in question, consist of an indefinite number of stamens, consisting of erect parallel

anthers, supported by very short filaments, and disposed on an horizontal receptacle. Each anther is membranous, of one cell, opening at the summit, for the most part with a lid, and discharging an extremely fine elastic powder, or pollen, after which the anther becomes flaccid, and withers. Intermixed with the anthers, we find a number of slender, club-shaped, jointed, pellucid, juicy filaments, about whose nature there has been much dispute, but which seem most probably abortive stamens, capable, according to circumstances, of being perfected, but generally inefficient and superfluous. Abundant similar instances to this, occur throughout the vegetable kingdom. Such is the usual structure of the stamens of Mosses; but the genus *Sphagnum* differs somewhat from the rest. Its anthers are elliptical, supported by taller filaments, and each is encompassed with the semblance at least of a vertical jointed ring. They likewise indeed burst at the top, though not with a lid. Their structure approaches nearly to the anthers of *Jungermannia*, so copiously illustrated, and now placed beyond the reach of doubt, by Mr. Hooker, in his valuable monograph on that genus. It may be worth observing that the habit of *Sphagnum* approaches *Jungermannia*, in its pallid hue, highly cellular texture, and want of a midrib in the leaves. The male flowers of mosses are often accompanied by an extraordinary change in the neighbouring leaves, which assume an enlarged, coloured, star-like aspect. These parts were all noticed, in the *Bartramia fontana*, by Linnæus, as he travelled through Lapland, in the summer of 1732, and the just ideas which he conceived of their nature may be seen in his "Tour in Lapland," v. 1. 183, which remained latent in his manuscript journal till very lately. It does not appear that he had then obtained any knowledge of the similar observations of Micheli, published in 1729 at Florence. That author, in his 59th plate, describes, with great fidelity, the anthers, accompanied by their barren filaments, in several mosses; but mistakes the former for female organs, the latter for male, comparing their situation, with respect to each other, to the florets of compound flowers.

The female or fertile flowers, or pistils, of Mosses, were first described by Schmidel, in his *Icones Plantarum*, p. 16, where he mentions having observed them in *Mnium pellucidum*, now called *Tetraphis pellucida*. At the same time we think he clearly indicates their nature; though Hedwig gives this honour to Schreber, who certainly in his celebrated dissertation upon *Phascum*, p. 19, more decidedly explains the matter. To Hedwig himself however belongs the merit of having amply described and delineated the pistils of numerous Mosses, in his various publications. These are usually, but not invariably, in a separate flower from the stamens, and consist, in their earliest state, of several erect, parallel, tubular bodies; slightly enlarged, and most solid, at their base; membranous, dilated, and apparently pervious, at their summit. It is seldom indeed that these organs have been investigated in their earliest and unimpregnated state; for one, if not more, of them is commonly found more vigorous than the rest, which wither at its base. It seems that, as soon as impregnation has taken place, the tubular part, which consists of both style and stigma, is greatly and speedily elevated, in consequence of an enlargement of the infant germen; and still more, by the production, or elongation, of a peculiar organ, termed the fruit-stalk, on which the germen stands, and by whose sudden growth the young veil, or *calyptra*, is torn from its base, and carried up along with the germen or young fruit. There it remains entire, crowned with the brownish withered stigma, till the swelling fruit obliges it to split, turn aside, or fall off. The elevation of the *calyptra* is one constant point



point of difference betwixt the *Musci* and *Hepaticæ*; for in the latter it bursts to let the capsule pass. Nor can we refrain from mentioning another coincidence between that order and the genus *Sphagnum*. The base of the *calyptra* is permanent in the latter, as well as in *Andræa*, the upper half only of that membrane being torn off by its swelling capsule, which capsule is remarkable for remaining sessile, having no fruit-stalk, in which circumstance we trace a further resemblance to some genera among the *Hepaticæ*. We mean not, by pointing out these analogies, to hint at any real ambiguity in the nature of the genus *Sphagnum*, which is truly and properly a Moss, as well as *Andræa*.

The fruit of this order is invariably a capsule, of one cell, opening by a transverse deciduous lid, and destitute of valves, except in *Andræa*, which has four valves, and a more permanent lid. There is another seeming objection, in the genus *Phascum*, the most diminutive of *Musci*, whose lid, though indicated, as usual, by a beak, and by some difference of colour, is not really deciduous, the capsule splitting at one side only, in an irregular manner. This is one of those curious exceptions, which occur in every department of natural history, like the solitary instance of three stamens, instead of five, in one syngenesious plant, a species of *Siegesbeckia*, and the disunion of the anthers in a very few more of that most natural class. The lid of the capsule of mosses is rarely without a conspicuous point at the summit, which is often elongated into a conical or taper beak. To this the inner side of the veil is, in an early state, attached, their union being dissolved sooner in some species than in others. The central part of the lid itself is united to a central column, most conspicuous in *Gymnospermum*, and, according to Hedwig, present in all Mosses. Whether impregnation be communicated to the seeds through this column, or by any other channel, has not been explained. By Hedwig's figures of some unripe seed-vessels, the young seeds seem to occupy but a small cavity, in the midst of a highly cellular or vascular mass, through which last it must be presumed the action of the pollen may be communicated.

The base of the capsule, or the top of the fruit-stalk, is sometimes accompanied by a tumour, or succulent appendage, often coloured, highly remarkable in the beautiful genus *Splachnum*, of which it forms one of the most striking characters, being in some species far more obvious than any other part, in the form of a broad circular disk or cap, of a vivid red, or bright yellow. Yet its use is totally unknown. Its colour indicates some connection between this part and the action of light; which may perhaps operate through it upon the fructification, as is supposed to be the case with the petals of other plants.

The base of the lid, or the orifice of the capsule, is in several mosses surrounded by an elastic band, termed the *annulus*, or ring, whose inside is lined with two, three, or four rows of succulent pellucid processes. The precise use of this part is not determined, except that, being an exquisite hygrometer, it may by its spring serve to throw off the lid. Hedwig has detected it in many species of *Hypnum*, but recommends the common *Dicranum pulvinatum*, or rather *Grimmia pulvinata*, Engl. Bot. t. 1728, as a fit subject for examination on this account.

The Fringe of the capsules of Mosses has already been explained in a separate article. (See FRINGE.) We shall advert to it again presently. It is hardly worth mentioning that Meese, as well as our sir John Hill, fancied the fringe to be the stamens of Mosses.

The seeds of these plants are extremely abundant and minute, appearing to the naked eye like an impalpable powder, of a green or brown colour, protruded from the

capsule on the removal of its lid, either spontaneously, or by the slightest compression of that part. That this fine powder is really seed, has first been proved by Meese, who, in the year 1767, raised plants of *Polytrichum* from thence. (See MEESIA.) But the far more accurate and lucid experiments and remarks of Hedwig, now leave no doubt on this subject. That acute observer detected differences in the shapes and surfaces of the seeds in different Mosses, in some measure analogous to the various configuration of the same part in other natural orders. He has also repeatedly observed their germination, and delineated their cotyledons, if such they may be called, which are perhaps the most curious and extraordinary part belonging to these plants. When the seed of a Moss sends forth its radicle downward, it protrudes upward an oblong, obtuse, succulent, pellucid, jointed shoot, either simple or branched, solitary or accompanied by several others like itself, which should seem to be analogous to the cotyledons of other plants; and yet in their appearance, and frequently multiplied and indeterminate configuration, are very unlike the generality of those organs. The distinction between them and the infant germ or herbage is as strongly marked as possible, in which respect the germination of Mosses differs a little from that of Ferns. Otherwise the latter might be expected to throw much light upon the former. The detection of these parts in Mosses, overthrows the classification of them among the *monocotyledones*, or *acotyledones*; which indeed, though generally adopted, has always been hypothetical. The ingenious Mr. Brown, well aware of the danger which hence arises to the main hinges of the natural systems at present established, hints, at the end of the preface to his *Prodromus* of New Holland plants, that the supposed cotyledons, both of Ferns and Mosses, are entirely the produce of germination. We anxiously expect from him some further elucidation of the subject, and shall be very glad to get rid of the difficulty, which seems to us not at all lessened by considering the parts in question as of a new and unheard of nature, unless we on that account decidedly separate these two natural orders from all other plants, as a class by themselves, which their anomalous nature in many respects would abundantly authorize.

Having given the above view, which appears to us the true one, of the fructification of Mosses, it is proper to mention some different hypotheses, which have been advanced, by botanists of great eminence, upon the same curious subject. We shall first dismiss the decision of Necker, who declares that "whatever has been advanced, or may in future be said, of the sexual propagation of Mosses, will always be to him a fiction and a dream:" that he is "certainly persuaded no person in any age will be able to demonstrate such, in any of the Mosses at present known:" and he undertakes to prove that "Mosses have neither any distinct male and female organs, nor any real seed." This challenge he never made good, and he is refuted by the experiments of Hedwig. Necker, like Adanson, believed that Mosses were propagated by buds or shoots, the latter says even by seeds, without any fecundation. No doubt they are so increased, like the bulb-bearing *Lilium*, *Dentaria*, and *Saxifraga*; but this does not preclude sexual generation, in the one case more than in the other. Haller was nearly of the same opinion with Necker, but rather from reading than experiment, as many others have been. Another set of philosophers have made a compromise with the sexual system, by presuming that the dust of the capsules, now proved to be seed, might partake so far of the nature of pollen as to give vigour and increase to the buds of the plant by falling upon them. What they under



understood by these buds, were in some cases really so, but most frequently the male blossoms, after the production of which they observed the branches of some Mosses, as the *Polytrichum*, to make a sudden shoot, and this was the only circumstance that favoured their hypothesis. Of this opinion was Dillenius, the great investigator of the species of Mosses, but of less authority as a physiologist. We have already mentioned his influence over the better judgment of Linnæus, whom he misled on the point before us. (See DILLENIIUS.) Hence, throughout the works of the great Swedish botanist, what is really the capsule is called the anther, for such he, as well as Dillenius, believed it to be; though the latter negligently termed it *capsule*, meaning by that word simply a *little box*, not a seed-vessel. Hedwig, who rightly understood the nature of this part, not content with its proper name, denominated it *sporangium*, which is merely a translation of *seed-vessel* into Greek; for by the term *spora* he meant precisely *seeds*, the produce of sexual impregnation, as all his experiments tended to prove. This mistake cannot be too often impressed on the Cryptogamic student. We have already twice adverted to it. (See GEMMA and HEDWIG.) Nor can we too often deprecate the admission of new terms into the sciences of natural history or philosophy, when they communicate no new information, and either mark a distinction without a difference, or, as in the present case, lead only to error.

The Hedwigian theory of the impregnation and seminal propagation of Mosses being, as it appears to us and to most practical muscologists, so clearly established, it was little to be expected that a new hypothesis would, in our days, be advanced. Yet such a phenomenon has appeared, from the able pen of no inexperienced theoretical adventurer, but a practical and philosophical botanist, M. Palhlot Beauvois, whose ideas on the subject, which we shall briefly state, may be seen at length in Sims and König's *Annals of Botany*, v. 2. 218.

This writer considers what we term the capsule, as a flower, containing within itself the male as well as female organs of impregnation. It is composed of five parts, which are always present, and indispensable; and occasionally of one or more of five others, which are accessory or adventitious. All these we shall detail.

1. The *veil*, which is, as we have described, of a hood-like shape, either smooth, or striated, naked or hairy, single or double. This part is considered by the author as a sort of external corolla, at least with regard to its functions. It envelopes every part of the young budding flower, except the *perichætium*, or sheath, where such is present.

2. The *lid*, an organ almost peculiar to this family, as above described. This, as M. P. Beauvois thinks, falls off at the time the flower is ripe for impregnation. The Hedwigian botanists believe it to remain till the seeds are ready for dispersion.

3. The *urn*, which is no other than our capsule, or at least its external coats, with which the outer fringe, when present, is connected. This urn the author compares to a real corolla, or second integument of the flower.

4. The *pollen*, or fecundating dust. An assemblage of minute round rough grains, contained in a peculiar membrane, covered by the urn. This membrane is open in some mosses, and furnished at its orifice with fine teeth, the inner fringe of Hedwig; in others it is closed, bursting when ripe, without any teeth or marginal fringe. Its shape is conformable to that of the urn. In mosses furnished with a fringe, this dust explodes with one or two puffs. This supposed pollen is what those of the Hedwigian school believe to be the seed, because they have seen it germinate and produce

plants, which is surely enough to confute the system of our author.

5. The *pistil* or *capsule*; the central column, or *columella*, of Hedwig and his followers. "An organ of various forms, occupying the centre of the urn, inclosed within the antheriferous sac, and surrounded by the pollen." No style is to be discovered, except perhaps in *Splachnum*. The stigma is capitate, four or five-cleft; pointed and conical in some species of *Hypnum*. Germen oval or oblong, smooth or villous. "It is generally supported on a stalk, that takes its rise from the sheath, traverses the tube (or fruit-stalk), and penetrates as far as the urn, where it sometimes divides into several branches, that unite again at the base of the germen. At other times it traverses a green fleshy substance, that occupies the bottom of the urn, and on which the capsule appears to rest."

The five following parts are of only partial occurrence.

6. The *teeth* (or *outer fringe*). These form a border to the outer covering of the urn, and are generally lanceolate, pointed, variable in number from eight to sixty-four (the author considers the four teeth of *Tetraphis* as constituting the lid, not the fringe, a great error, copied from Schmidel), single or in pairs, or each split into two, rarely short and obtuse. "These when present contribute essentially to fecundation, by means of a regular movement of irritability, by which they alternately recede from and approach each other." In *Polytrichum* the teeth are immoveable, and accompanied by an horizontal membrane. In some genera they are attended by an inner fringe, in others not. Several mosses are destitute of these teeth altogether.

7. The *cilia* (or *inner fringe*). These form, at the orifice of the urn, a border to the inner membrane, of which they appear to be merely a continuation. They are slender, of a silky aspect, straight or spiral, generally eight, sixteen, or thirty-two, distinct or united into one or several bundles, and assist like the teeth, separately or conjointly with them, in the fecundation of the seeds. Their irritability is less, and consequently their movement not very evident. The author considers the twisted teeth of the genus *Tortula* as of the nature of an inner fringe, unaccompanied by an outer one, in which he appears to be very correct.

8. The *horizontal membrane*. This is peculiar to the mosses included by Hedwig under *Polytrichum*, of which M. P. Beauvois makes three genera, and is what is commonly taken for their inner fringe. It is very thin, perforated like a sieve, and supported by the teeth.

9. The *sheath*, which is nearly universal, is a small cylindrical tube, at the base of the stalk or tube of the urn, and may be considered as an inner calyx, in which the urn, and all its parts above described, are enveloped at their first formation.

10. The *perichætium*, or *scaly sheath*, this is esteemed by the author as a real calyx, in which we concur. It consists of several leaflets, generally membranous, constantly different from the foliage, and more or less imbricated. This part is exemplified in *Hypnum* and some other genera. We have not before mentioned it, or the foregoing.

M. P. Beauvois observes that as soon as the fringe, or fringes, are no longer retained by the lid, "they begin to move one among another, separating and approaching each other alternately, as long as the urn contains pollen and seeds." He conceives, therefore, that in all mosses furnished with any fringe, the pollen and seeds are discharged with an explosion, the instant the lid falls off; and that the teeth serve to retain both for a while, and to promote their coming in contact with each other; for his opinion is, that  
fecundation



fecundation takes place in mosses, as in fishes, after the seeds or eggs are dislodged!

Such are the principles of the theory of this ingenious Frenchman. We would briefly remark, that if such be the mode of impregnation, what is the use of the various stigmas which he describes? We should have been glad of some description of the seeds of Mosses, or at least of some assurance that the author had seen them, of which in the paper before us there is no mention. In another work on the subject it appears, from the accurate investigation given by Mr. R. Brown, Tr. of Linn. Soc. v. 10. 313, that M. Beauvois has been misled, by a transverse section of some capsules, to take for seeds produced there, what were really accidentally forced into the cellular substance of the central column, which he is pleased to consider as the capsule! By a longitudinal section of the column this is avoided, and the internal part of that organ is found destitute of all appearance of seeds. As far as we have observed, the column dries and sinks together by the time the real seeds (the pollen of Beauvois) are ripe for explosion. If any person should still have a doubt on the subject, and imagine that Hedwig and others, in sowing the pollen (which they took for seed), might sow the real seed of Beauvois along with it, and that the latter was what actually rose into plants; such persons may satisfy themselves by easily procuring the green powder from the head of the common *Polytrichum* before explosion. If they at the same time look at the central column, they will find little to countenance the opinion of our author respecting that part. We shall conclude the subject with remarking, that the motions in the fringe of mosses, curious as they are, appear to us purely hygrometrical, and by no means owing to irritability; and further, that this ingenious writer, in his examination of what Hedwig believed to be the male flowers, appears not to have distinguished them sufficiently from *gemmæ*. Yet, strange to tell! he has in the genus *Jungermannia* asserted the anthers to be seed-vessels, and what every body else believes to be the capsules, he takes for anthers! In this case too he asserts those spiral fibres to be irritable, which appear to us simply elastic, or perhaps hygrometrical. Mr. Hooker, under the twenty-fifth plate of his excellent work on the genus in question, has controverted these gratuitous suppositions of M. Beauvois; and very justly observes, that whoever will compare the parts which Hedwig takes for anthers in the mosses, with those which he also esteems such in the *Jungermannia*, must conclude both to be destined to perform similar functions. The latter have been examined and represented by Mr. Hooker, in almost every species that he has published, as well as the prolific and abortive pistils, the bursting veil, and every other essential organ. Every thing confirms the opinion of Hedwig, as clearly as all the most conspicuous flowers elucidate the same doctrine; which, when asserted by Linnæus, in the beginning of his career, met with far more elaborate opposition. There is however this remarkable difference in the present state of the question, that the sexual doctrine is now so generally admitted with respect to vegetables, that in overturning one theory of impregnation, M. Beauvois found himself obliged, at any rate, to set up another in its stead. Even Gärtner, who contended so much for sexual propagation in some departments of the *Cryptogamia*, chose to have recourse to the conjecture of Hill, that the fringes of Mosses were their anthers, rather than deny their sexual impregnation. This idea, however, has nothing but vague conjecture to support it. Nothing like pollen or anthers is found in this part, and there are very numerous species totally destitute of all fringe whatever.

The objections of Gärtner to the Hedwigian doctrine of the flowers of Mosses, though laboured, are entirely hypothetical, and in that respect unworthy of so great a practical inquirer. They are, 1st, the dioecious nature of most Mosses. "Why," says he, "should Nature, in this numerous tribe, have chosen the most uncertain and difficult of all modes of fecundation, unless it be said that she has purposely aimed at defeating her own ends." On this point we humbly leave Nature to answer for herself, and we believe that a satisfactory reply will not be withheld from any unprejudiced inquirer. 2dly. Gärtner says the impregnation of these plants is supposed to take place at a period when nothing like the rudiments of seeds can be seen in the ovary or germen, the contents of which are then a pulpy chaos. We would ask, in answer to this, what could be discernible, at the same period, in the germens of many of the largest and most perfect flowers, if reduced to the same exquisite minuteness? How are the pellucid coats of seeds scarcely visible when ripe, and umbilical vessels hitherto unseen at any period, though Gärtner himself would certainly not doubt their existence; how are these to be detected so early? As to the word *chaos*, as applicable to what is inscrutable to the human eye, would Gärtner apply that term to the yolk of an egg even before impregnation? 3dly. This writer asserts that many of these supposed anthers never discharge any thing, but fall off entire. Here he appears to have taken buds for anthers. He adds, that if some of them do "belch forth" (we use his literal expression) some granular matter, that explosion is allowed by Hedwig himself to be chiefly caused by moisture, "whereas nothing is more certainly fatal than moisture to real pollen, nor does any thing more hinder its explosion." This last passage is truly curious. Did not Gärtner know that pollen in general explodes by moisture alone, that the liquor of the stigma is destined to make it explode, and that the accession of wet is injurious, only by causing it to explode prematurely? If we give him credit for being ignorant of the nature of the pollen in the *Orchidæ* and *Convolv.*, had he not seen enough of other plants to understand that there may be different kinds of pollen, whose structure and whose mode of operation may be in some measure as various, as those admirable seeds and seed-vessels with which he was so conversant? Could he not conceive that the pollen of vegetables destined to blossom in moisture, like *Musci* and *Hepaticæ*, might, by something resinous in its composition, be protected against atmospheric humidity, and be soluble, or active, only through the operation of a substance appropriated to that purpose, which Hedwig seems actually to have detected in the stigma of *Bryum punctatum*; see his *Fund. v. 1. t. 10. f. 67.*—4thly. He objects to the probability of the supposed anthers being such, and still more to their being, instead of anthers, themselves naked pollen (as Hedwig at one time thought), because of their prodigious size compared to the seeds. As to their being anthers, as we believe, or naked grains of pollen, it is of no importance to the argument. Does not this very circumstance, of the great bulk of these parts, tend to invalidate Gärtner's first objection, as it would appear that in these, as well as in the larger dioecious or monoecious plants, there is a superabundance of pollen to compensate for the hazard which attends its conveyance?

Ventenat seems favourable to Gärtner's opinion, in his *Tableau du Règne Végétal*, v. 2. 44. 49, chiefly because he says many Mosses are totally deprived of the supposed male flowers. He ought rather to have said "they have not been observed in all;" at which those who have ever so little practical knowledge of the subject will not wonder.

Mosses



Mosses are generally most noticed and collected when their capsules are fully formed, or ripe. The more they are examined earlier, the more of their male flowers are, from time to time, observed. The same writer remarks that there are Mosses which fructify under water, where they pass all their lives. He asks, "if the organs are not both in the same cover, how can the male dust reach the female organ, without being spoiled by the water?" This is indeed a difficulty respecting the history of mosses, as well as of some other plants. To remove it, we ought to investigate the very few Mosses so circumstanced, and to observe carefully whether they do not rise above the water at the flowering season, like the numerous tribes of other aquatic plants; or if otherwise, whether their pollen be not of a peculiar nature, accommodated to its situation, like that of the *Chara*. We think the former would most likely prove to be the truth.

The SYSTEMATICAL ARRANGEMENT of MUSCI comes next under our consideration.

On this subject nothing can justly be said to have been attempted previous to the labours of Dillenius and Linnæus. They most laudably depended upon the parts of fructification only, as far as they knew, or thought they understood, those parts, for the accomplishment of their purpose. They aimed at establishing genera upon this sure basis, while they paid at the same time a due regard to habit in their conceptions of those genera. On this last point, these great men stand unrivalled by any of their successors, few of whom appear ever to have kept any such object in view. The deepest muscologists of the German school, seem unaccountably ignorant and incurious respecting this part of the study. Dazzled with the discoveries of their great Hedwig, and with the beautiful precision of his technical marks of discrimination, they take those marks for absolute guides, without adverting to natural differences or affinities. Some of Hedwig's successors especially, carry this artificial principle to excess, and take its extreme refinements as a standard of excellence. "Such different talents are observation and judgment!"

Dillenius considered a transverse deciduous lid to the capsule as the distinguishing mark of his "more perfect mosses," our *Musci* properly so termed. This character also belongs to his *Mnium*, though he places that genus by itself, on account of its bearing "two kinds of powdery heads," one of which indeed is the male flower, the other the capsule. Dillenius in his ideas reversed them, taking the one for the other, as we have already explained; nor is his primary definition, in which he includes *Mnium* with the rest, strictly correct, according to his own theory, "*fructification conspicuous in powdery beads*;" for he esteemed those heads to be anthers, consequently only a part subservient to fructification. It is however more literally true, if we take the heads for real fruit, or capsules of seed, as they now are proved to be. We shall therefore continue to use this appellation for the part in question, as we explain the arrangements of Dillenius and Linnæus, though the former only called them so, believing them to be anthers, and the latter used the latter word, because he judged it to be correct. To recur to this confusion of ideas and terms, would perplex us in our progress, and the reader of Linnæus has only to substitute every where *capsules* for *anthers* in his characters of these plants.

The next subdivision of Dillenius, into Mosses with a *calyptra* (veil), or without, is erroneous. The latter consists of *Sphagnum* alone, which is known to have a veil.

His next section is into Mosses "with sessile capsules,

enclosed in a sheath or calyx," of which *Fontinalis* is the only example, though its capsule is by no means really sessile; and Mosses whose capsules have no such calyx (or rather are not included therein), but stand on longish fruit-stalks, termed by him bristles.

The latter are distinguished into those whose fruit-stalks are axillary, and produced along the branches, being encompassed at the base with a scaly involucre, different from the leaves, which are the characters of *Hypnum*; and those whose fruit-stalks proceed either from the ends of the stems or branches, or from the roots, or from annual shoots which, in the preceding year, were the termination of the stem. Such fruit-stalks want the scaly involucre, but have a tubercle for their base. The veil of this last section is either smooth, which marks the genus *Bryum*, or hairy, which is the character of *Polytrichum*. These are all the Dillenian genera. Linnæus has added to them *Phascum*, *Buxbaumia*, and *Splachnum*; but his characters of the two first are erroneous, though the genera are distinct. We have already mentioned that Linnæus includes *Lycopodium* among the *Musci*, as indeed does Dillenius, but the latter places it (subdivided into four genera) in a separate section, distinguished by having no lid to the capsule. As to the *Porella* (or *Poronia* as Dillenius at first called it) of these authors, it is proved by Mr. Dickson, in Tr. of the Linn. Soc. v. 3. 238, to be a *Jungermannia* which had met with some injury.

Botanists have often met with difficulties in the application of the above principles, which did not escape those who first advanced them. Some Mosses referred by Dillenius and Linnæus to *Bryum*, have really a scaly involucre; as the *scoparium* and its allies, *Dill. t. 46*. In others there is great difficulty in ascertaining the fruit-stalk to have been originally terminal, so much is the stem or branch elongated beyond its origin or insertion, of which some of those, formerly supposed *Brya*, now referred to the new genera of *Dicranum*, *Trichostomum*, and *Tortula*, afford instances. All such difficulties are removed by the modern improvements, of which we are now to speak. Hedwig, by taking the Fringe and its various forms into consideration, has opened a new and most successful road to the clear definition of the genera of this natural order, as we have already explained. (See FRINGE.) We have in that article exhibited the characters of the part in question, in all the genera which appear to us well distinguished thereby. But it is necessary here to give a full exposition of Hedwig's system, including all his genera; that the student may see to what extent this original principle of the author is there employed, as well as what use he has made of the principles of his predecessors. These, as well as his own, he has carried to their greatest extent, introducing the lateral or terminal situations of the male as well as female flowers into his generic characters. This is his chief error; splitting the subject into obscure, uncertain, and unnatural refinements; losing sight of the great Linnæan rule, that "the genus ought to give the character, not the character the genus," and, in short, rendering the whole system as artificial and as difficult as it could be made. We shall correct a few incidental mistakes as we proceed. It would be too tedious to trace the progress of Hedwig's arrangement, through the changes which have taken place in his different publications; especially as these are not material; and we shall take his latest view of the subject, from the *Species Muscorum*, published in 1801, after his death. The hard Greek names which encumber, rather than distinguish, his sections, and his new terms for well-known things, may be dispensed with. His merits far outweigh such blemishes.



SYSTEM OF HEDWIG.

The capsule of Mosses is either destitute of a regular orifice, as in - - - } *Phascum*;  
or constructed with one, as in all the following.  
Mouth naked, or destitute of a fringe.

1. Male flower club-shaped - - - *Sphagnum*.
2. Do. in a terminal head - - - *Gymnostomum*.
3. Do. axillary - - - *Anisangium*.

For remarks on these three, see GYMNSTOMUM.

Fringe of a single row of undivided teeth.

Teeth four, unconnected at either end; flowers polygamous - - - } *Tetraphis*.  
- - - , connected at the summits - - - *Andraea*.

[Mr. Hooker has shewn, Tr. of Linn. Soc. v. 10. 382—387, that this latter has a capsule of four valves, which botanists in general, like Hedwig, have taken for the fringe, but which in fact afford the peculiar character of *Andraea*, bearing the lid on their points, and starting asunder in wet weather, in their middle part only, to let the seeds pass. Ehrhart originally described this capsule rightly; but his ideas, buried in pedantic novelty of phraseology, have been overlooked.]

Teeth eight, capsule without an apophysis - - - *Ooblepharum*.  
- - - , capsule with an apophysis - - - *Splachnum*.

Teeth sixteen, capillary or linear, straight and equidistant; male flower axillary, female terminal on the same plant - - - } *Encalypta*.  
- - - , - - - ; male and female flowers axillary on separate plants - - - } *Pterigynandrum*.  
(*Pterogenium* of other writers.)

- - - , straight, approximated in pairs; male as well as female flower terminal - - - *Cynotodium*.  
- - - , twisted; male as well as female flower axillary - - - *Didymodon*.  
- - - , male flower axillary, female terminal - - - *Tortula*.  
- - - , male and female flowers terminal - - - *Barbula*.

Teeth sixteen, pyramidal; male flower axillary - - - *Grimmia*.  
- - - , male flower terminal - - - *Weissia*.

Teeth more than thirty, cohering by a membrane; male and female flowers terminal - - - *Polytrichum*.

Fringe of a single row of cloven teeth.

Teeth thread-shaped and straight, narrow at the base; male flower axillary - - - } *Trichostomum*.

Teeth broad, deeply cloven; male flower axillary - - - *Fissidens*.  
- - - , terminal - - - *Dicranum*.

Fringe double.

Inner Fringe membranous, with pointed teeth; flower united, terminal - - - *Webera*.  
Inner Fringe membranous, with abrupt teeth; male flower terminal - - - *Buxbaumia*.

Inner Fringe membranous, furrowed, contracted into a cone, finely lacinated at the orifice; flower united - - - *Bartramia*.

VOL. XXIV.

Inner Fringe with reticulated teeth; male as well as female flower axillary - - - *Fontinalis*.  
- - - , male as well as female flower terminal - - - *Meesia*.

Inner Fringe with ciliary teeth; unconnected and equidistant - - - *Neckera*.  
unconnected, approaching each other in pairs - - - } *Orthotrichum*.

Inner Fringe with ciliary teeth; cohering by a membranous base; teeth uniform; male flower axillary, female terminal - - - } *Timmia*.  
- - - ; flower united, terminal - - - *Pohlia*.

- - - ; male and female flower axillary - - - } *Leskea*.

teeth of various shapes; female flower terminal; male flower terminal, discoid - - - } *Mnium*.

male flower terminal, in a round head - - - *Bryum*.  
- - - , axillary - - - *Arrhenopterum*.

teeth of various shapes; male and female flower axillary - - - } *Hypnum*.

Inner Fringe with ciliary teeth; cohering by their points; male and female flower terminal - - - *Funaria*.

The author of the *Flora Britannica* first presumed to abolish *Cynotodium* and *Didymodon*, uniting them to *Trichostomum*, from which they differ in having their teeth, though approximated in pairs, quite unconnected at the base. But the membranous web in *Trichostomum* is often so very slight and narrow, as to be hardly discernible, though in other cases more obvious; and these mosses are all by nature evidently of one genus. The lateral or terminal situation of the flowers, whether male or female, in Mosses with a single fringe, will appear, to those who consider them under that point of view, to lead to no natural discrimination whatever. The character is also peculiarly difficult in these to ascertain, and we question much whether *Didymodon* will really be found to have axillary female flowers, if examined at the time of their first formation. For the same reasons *Barbula* of Hedwig is sunk in *Tortula*, and *Weissia* in *Grimmia*, by all British botanists.

As to *Fissidens*, the genuine species of that genus, whose leaves are two-ranked and compressed, form so natural and distinct an assemblage, that it is much to be wished they could be separated from *Dicranum*. In consideration of their very peculiar habit, perhaps the Hedwigian character of the axillary male flowers might here be allowed to mark the genus; more especially as the female flowers are in some cases lateral. (See DICRANUM, sect. 8.) It must also be observed, that some of Hedwig's species of *Fissidens* appear to be no less improperly considered as such by their character than their habit. In the latter they agree with *Dicranum*, and it is difficult to understand, by Hedwig's own excellent plates, how he could consider their male flowers as otherwise than terminal. The species to which we allude are *F. polycarpus* and *strumifer*, Hedw. Crypt. v. 1. t. 31, 32.

In the generic arrangement of Mosses with a double fringe, we find the union of the stamens and pistils in one flower, by which alone *Webera* and *Pohlia* are separated from their natural congeners, a character of no consequence whatever, and not less artificial than obscure.

On the uncertainty and obscurity of generic characters founded on differences of the inner fringe, we need not repeat what may be found under the articles FRINGE of Mosses, HYPNUM, LESKEA, MEESIA, and MNIMUM. The last mentioned, like *Bartramia*, is best marked by the six-



teen strong furrows of its capsule, though many of Hedwig's species are thereby discarded. If *Meesia* be retained as a genus, it must be on account of the short blunt teeth of the outer fringe, rather than any thing in the structure of the inner.

The genus most difficult to characterize by the Hedwigian characters is *Orthotrichum*, though no genus can be more natural. Its species, one only excepted, all seem, as Mr. Turner remarks, scarcely more than varieties, so closely and naturally are they allied. Yet they differ widely in their fringe, the inner one being in some composed of sixteen, in others of but eight teeth, and in others totally wanting. Their outer teeth, naturally sixteen, each marked with a longitudinal furrow, are in some species combined into eight, each with two furrows. But here another part of the fructification offers itself to our aid. The strongly angular or deeply furrowed veil, to say nothing of its ascending hairs, which are not constant, stamps this genus decidedly. A valuable paper on this subject, by the late Mr. Mohr, may be seen in Sims and König's *Annals*, v. 2. 532. We hesitate to adopt a new genus of the author's, named *Ulota*, though it differs from *Orthotrichum* in the curling of its leaves when dry, of which *O. crispum*, the species above alluded to as unlike the rest, is an example. Mr. Mohr characterizes *Orthotrichum* as having eight keeled ribs to its veil, with deep furrows between, whereas in *Ulota*, intermediate furrows take place of those ribs. His remarks however are well worth attention, as well as what concerns the veil in *Neckera* and some others. He hints at the practicability of making this part subservient to generic discrimination, where the Hedwigian characters have been objected to, as in *Aniðangium* and *Gymnostomum*, *Grimmia* and *Weissia*. We fear his distinctions are too nice for common use, especially as it is often so difficult to obtain specimens with the veil in a good state for examination. But a more weighty objection is, that it does not appear to us to lead to the determination of much more natural genera. The acute and learned author however is of a different opinion, and he has candidly put the decision of the question into any one's power, having enumerated, under each genus, the species of each, as he would, on this new principle, wish to dispose them. He ascribes to *Aniðangium*, *Grimmia*, and *Trichostomum*, "a veil shaped like a mitre," (we should rather say an extinguisher,) "somewhat halved," that is, partly split up on one side, "unequally torn at the base, and falling off obliquely." To *Gymnostomum*, *Weissia*, and *Dicranum*, he gives "a hooded or halved veil, nearly entire at the base, falling off obliquely."

There are several distinguished writers on *Musci*, besides those whose systems and remarks we have detailed, especially Bridel, the author of a large and elaborate *Muscologia* in Latin, making two quarto volumes, published in 1797 and 1798, and composed on the principles of Hedwig. Dr. Swartz, who wrote the *Methodus Muscorum*, published in 1781, under the presidency of the younger Linnæus, printed in 1799 a neat little volume on Swedish Mosses, with several coloured plates; and Mr. Dawson Turner, in 1804, gave a more detailed account of those which are natives of Ireland. The writer of the present article has, in his *Flora Britannica*, vol. iii. first distributed the Mosses of Britain and Ireland according to the system of Hedwig, with some alterations, and with original descriptions; and has in the English Botany published figures, with English descriptions, of nearly the whole of them. Hoffmann and Roth have described the Mosses of Germany in their Floras; but the latter is less original in this department than in most of his excellent writings. Many of this tribe are figured in the *Flora Da-*

*nica*, but not happily: a very few in Curtis's *Flora Londonensis*, and the works of Jacquin. We must repeat that Hedwig is unrivalled in his figures and descriptions, if not in his technical definitions, of this his favourite family. The accurate and ingenious Schrader, wherever he has touched upon the same subject, has contributed to elucidate it, but appears to have paid less attention to Mosses than to other Cryptogamic subjects. A few New Holland *Musci* have been described by Labillardiere; but a much more complete account of the novel productions of that country, in this as well as other botanical departments, is to be expected from Mr. Brown; one of whose new genera may be found described under the article *LEPTOSTOMUM*. He has also, in Tr. of the Linn. Soc. v. 10. 316, along with *Leptostomum*, described and figured another new genus, called *Dawsonia*, in honour of Mr. Dawson Turner, the very curious and singular character of which is as follows.

*Fringe* tufted, of innumerable capillary straight equal hairs, originating from the capsule and central column! *Capsule* flat on one side, convex on the other. *Outer Veil* of entangled hairs; *inner* rough at the point.

*D. polytrichoides*, *ibid.* t. 23. f. 1, is the only known species, found about the shady banks of rivers, at the foot of the mountains, near Port Jackson, New South Wales. Its habit is precisely that of the larger species of *Polytrichum*, while its capsule and central column nearly agree with *Buxbaumia*; but the fringe is totally unlike every thing before observed. S.

MUSCICAPA, the Fly-catcher, in *Entomology*, bill nearly triangular, notched on each side, bent in at the tip, and beset with bristles at the root; the toes are mostly divided to their origin. Gmelin has enumerated ninety-six species, which are scattered over the warmer tracts of the globe, two only are common to our own country; the greater number are inhabitants of Australasia and Polynesia. Among ourselves the fly-catcher is a bird of passage, that breeds in the island, but retires as early as the month of August. It builds its nest upon the sides of trees, or of old walls, and feeds upon insects. When the young are led out, they generally take their station upon the higher boughs of trees, whence they are taught to drop perpendicularly upon the flies below, and to rise again in the same manner. Subordinate to the rapacious birds, and in the next class, nature has placed this tribe of hunters, more numerous than that of its superiors, because more useful. The largest of this genus is of the size of the butcher-bird, while the smallest is not larger than the nightingale. All the intermediate degrees are occupied by various kinds, differing in magnitude, but marked by the same generic characters.

We shall now give an account of the

#### Species.

PARADISI; the Paradise Fly-catcher. Crested, head black; body white; tail wedged, the two middle feathers very long. There are three varieties: 1. Head greenish-black; body chestnut, beneath white; lower part of the neck and breast grey. 2. Chestnut, beneath white; breast blueish. 3. Body paler; wing coverts golden. It inhabits Africa and Asia, and is about eight inches and a quarter long; head, neck, and chin greenish-black; back, rump, throat, and body beneath white; wing-coverts and quill-feathers black, edged with white; two middle tail-feathers fifteen inches long; legs lead colour.

MUTATA; Mutable Fly-catcher. Head crested; tail wedged; two middle tail-feathers very long; eye-brows blue. There are two varieties: 1. The body and tail of the one is of a cinnamon colour. 2. The other is a chestnut-colour;



## MUSCICAPA.

colour; two middle tail-feathers varied with black and white. It inhabits Madagascar, and is nearly a foot long. Bill and legs black; head, neck, and back greenish-black, the latter varied with white; body beneath white; wings black, longitudinally white in the middle; the two middle tail-feathers are more than four inches longer than the others, white, with a black spot near the tip, the rest is white on the inner, and black on the outer webs.

**STRIATA**; the Martinico Fly-catcher. Head crested; body brown, beneath cinereous; outer edge of the quill-feathers whitish. This, as its trivial name imports, is found in Martinico, and is six inches long; the feathers of the crown at the base, and quill-feathers at the edge, whitish; legs cinereous.

**FUSCA**; Black-headed Fly-catcher. Brown, beneath yellowish-white; bill, crown, and legs black. It inhabits Carolina, and is six inches and a quarter long; the tail is a little forked; the crown of the female is blackish.

**TYRANNUS**. Tail is very long, forked; body is black, beneath white. It inhabits Canada and Surinam.

**FORFICATA**; Swallow-tail Fly-catcher. Pale grey, beneath white; tail forked; quill and tail-feathers black, edged with grey, the outmost of the latter half white on the outer webs. This is about ten inches long, and inhabits New Spain.

**SURINAMA**; Surinam Fly-catcher. Tail rounded, tipped with white; body black, and beneath it is white.

**FULIGINOSA**; Brown Fly-catcher. This species is of a black-brown colour, the feathers edged with yellowish-brown, beneath whitish; quill and equal tail-feathers edged with whitish. It inhabits Cayenne, and is hardly four inches long. The bill and legs are black; the breast is mixed with brownish.

**AURANTIA**; Orange-breasted Fly-catcher. The colour of this species is greenish-rufous, beneath white; breast orange; head and neck above greenish-brown; quill-feathers black, edged with rufous. It inhabits the woods of Guiana. The bill is black and legs pale.

**CORONATA**; Round-crested Fly-catcher. It inhabits near the Amazon, and is five inches and a half long; quill-feathers edged with grey, the legs are reddish.

**MALACHIURA**; Soft-tailed Fly-catcher. Brown, beneath ferruginous; throat (of the male) blue; tail long, wedged, with loose-webbed feathers. It inhabits the marshy places of New South Wales, lives among the long grass and rushes, in which it hides itself very dexterously.

**RUFESCENS**; Rufous Fly-catcher. Glossy pale rufous, beneath white; quill-feathers black; crown with a brown band. It inhabits Cayenne. Bill and legs black.

**CINEREA**; Rufous-bellied Fly-catcher. Cinereous; rump, tail, and body beneath rufous. It inhabits Cayenne, and is about eight inches and a half long.

**PYGMÆA**; Dwarf Fly-catcher. Beneath straw-colour; head and neck rufous, spotted with black; feathers of the back and wing-coverts cinereous, edged with greenish; quill-feathers black, edged with grey; tail black, short. It inhabits Cayenne, and is barely three inches long.

**MINUTA**; Petty Fly-catcher. Olive-grey; wings blackish, with a few yellowish streaks. It inhabits South America, and is less than the last.

**BARBATA**; Whiskered Fly-catcher. Olive-brown; beneath greenish-yellow, crown orange; rump yellow. It inhabits Cayenne.

**RUBRICOLLIS**; Purple-throated Fly-catcher. Black; chin and throat with a large purple-red spot. The purple-throated fly-catcher is about the size of a blackbird; the whole plumage is black, except the chin, throat, and fore-

part of the neck, on which is a large bed of beautiful crimson, inclining to purple; the legs are black. These birds inhabit Cayenne, and other parts of South America; where they are found in flocks, and precede in general the toucans in their movements. They feed on fruits and insects; and are lively birds, always in action. They, for the most part, frequent the woods, like the toucans; and where the first are found, the others are seldom far off.

**CRINITA**; Crested Fly-catcher. Crested, head and neck blueish, belly yellowish; back greenish; quill and tail-feathers rufous. It inhabits Carolina and Virginia, and is eight inches long.

**FEROX**; Tyrant Fly-catcher. Brown; chin, throat, and breast cinereous; belly yellowish; greater wing-coverts edged with olive. It inhabits Cayenne, is seven inches long, and the legs are blackish.

**LUDOVICIANA**; Louisiana Fly-catcher. Grey-brown; beneath yellowish; chin cinereous; quill and tail-feathers edged with rufous. It inhabits Louisiana, and is the size of the last.

**AUDAX**; Yellow-crowned Fly-catcher. Blackish waved with rufous, beneath yellowish; crown yellow; frontlet white; rump and tail rufous. It inhabits Cayenne, and is eight inches long.

\* **ATRICAPILLA**; Pied Fly-catcher. Black above; under parts, spot on the front, and shield on the wings white; lateral tail-feathers white without; bill and legs black; tail-coverts spotted with white. There are three varieties: 1. Above varied with grey; thighs varied with brown and white; the three outmost tail-feathers edged with white. 2. Collar white, outmost tail-feathers edged with white. 3. Brown; beneath, front, sides of the head, and longitudinal line from the shoulder to the back white. The first three inhabit Europe, but the other is an Indian bird. The pied fly-catcher is not to be found in great numbers in any part of this island, but is most frequently to be met with in Yorkshire, and the contiguous counties. A nest belonging to two birds of this species was taken in 1803, in Axwell park, with a great number of young, and also the parent birds. The assiduity of the latter, which were almost unremittedly employed in taking flies for their numerous family, was highly interesting. The dexterity and attention of the male bird appeared most conspicuous. The third variety is found in the East Indies, and is four inches and a quarter long.

**RUTICILLA**; Yellow-tailed Fly-catcher. Black; breast, spot on the wings, and base of the quill and tail-feathers yellow. It inhabits America and Jamaica, and is the same size as the last.

**VIRENS**; Cinereous Fly-catcher. Greenish-brown, beneath pale yellow; eye-brows white. It inhabits during summer in Carolina, and is rather more than five inches long.

**VIRIDIS**; Chattering Fly-catcher. Green, beneath yellow; belly and vent whitish; eye-brows and spot under the eye whitish; tail brown. It inhabits unfrequented places of Carolina, and is seven inches long. It is a shy bird, and flies with its legs extended.

**SIBERICA**; Dun Fly-catcher. Brown; throat and vent spotted with white. It inhabits Siberia and Kamtschatka. The body of this species is inclining to cinereous.

**ERYTHROPIS**; Red-faced Fly-catcher. This species is spotted, beneath it is white, and has a red front. It is a Siberian bird.

**CAYANENSIS**; Cayenne Fly-catcher. This is brown, but the under parts are of a pale yellow; the eye-brows white, the crown pale orange. It is found, as its specific name im-



## MUSCICAPA.

**PORTS**, at Cayenne; also in Hispaniola, and is about seven inches and a half long.

**CANADENSIS**; Canada Fly-catcher. This is cinereous; beneath pale yellow; lores yellow; but the crown is spotted with black. It inhabits, as its name imports, Canada, and is four inches and a half long.

**CINNAMOMEA**; Cinnamon Fly-catcher. Yellowish-cinnamon; bar on the wings and tips of the coverts yellow; quill-feathers black, edged with ferruginous. It inhabits Cayenne, is eight inches long, and has a black bill.

**SPADICEA**; Yellow-rumped Fly-catcher. This is of a chestnut colour; quill-feathers, and even tail, brown; wing-coverts edged with rufous; rump yellow; belly and vent yellowish. It inhabits Cayenne, and is seven inches long. The bill is brown.

**OLIVACEA**; Red-eyed Fly-catcher. Olive, beneath white; eye-brows white, eyes red. There is a variety that has olive-coloured eye-brows, and wings marked with a double pale band. This species inhabits Carolina in the summer, and Jamaica in the winter. It is about five inches and a half long.

**SENEGALENSIS**; Senegal Fly-catcher. This is variegated; eye-brows white; outmost tail-feathers half white. There is a variety that has a black breast, and a body waved with black and white. It inhabits Senegal, and is four inches and a half long.

**CRISTATA**; Crested Senegal Fly-catcher. This species has a crested head, the throat is of a glossy black; the body above is bay, and beneath cinereous; the tail is wedged. It inhabits near Senegal, and is more than eight inches long.

**BORBONICA**; Bourbon Fly-catcher. Beneath cinereous; head greenish-black, with a violet gloss; back and tail pale bay; rump grey; quill-feathers black, edged with bay. This bird is found, as its name signifies, in the island of Bourbon, and is rather less than six inches long.

**MELANOPTERA**; Collared Fly-catcher. Cinereous, beneath white; throat brownish-bay, with a transverse black bar beneath; bill, wings, and tail black. This species inhabits Senegal, and is little more than four inches long.

**NIGRIFERUS**; Black-fronted Fly-catcher. Brown, beneath olive-brown; front and temples black; chin and throat yellow; tail-feathers olive-brown, the two middle ones brown. The same size as the last; the bill is blackish, and the legs are black.

**LEUCURA**; White-tailed Fly-catcher. Greyish-ash, beneath white; bill, legs, and middle tail-feathers black; the rest obliquely half white, the outmost nearly white. This inhabits the Cape of Good Hope, and is four inches and a half long.

**PONDICERIANA**; Coromandel Fly-catcher. Grey-ash, beneath white; lateral tail-feathers half white; spot on the wing-coverts and eye-brows white. Inhabits, as its name imports, Coromandel; is less than a sparrow, and sings well; the bill and legs are black.

**AFRA**; Spotted Yellow Fly-catcher. Dirty-yellowish, spotted with black; crown rufous, streaked with black; tail and wings rufous, the latter edged with brown. It inhabits the Cape, and is eight inches long; the sides of the neck are marked with two or three stripes, and there is one from the mouth.

**CANA**; Ash-coloured Fly-catcher. Cinereous; head, nape, and chin blackish; vent white; quill-feathers black, edged with cinereous; bill and tail black; lateral tail-feathers cinereous at the tips; middle ones cinereous, blackish at the tips. This species inhabits Madagascar, and is eight inches and a half long.

**MADAGASCARIENSIS**; Madagascar Fly-catcher. Olive; chin yellow; throat and breast yellowish. This also is found in the island of Madagascar, and is seven inches and a half long.

**UNDULATA**; Undulated Fly-catcher. Waved with whitish and brown; head blackish; wings rufous brown. It inhabits the isle of France.

**TECTEC**; Indian Fly-catcher. Brown, varied with small rufous spots, beneath pale rufous; throat whitish; tail and quill-feathers at the edges tipped with rufous. It inhabits the island of Bourbon. The bill and legs are brown; the female is white where the male is rufous.

**RUFIVENTRIS**; Rufous-vented Fly-catcher. Black; vent and lower tail-coverts rufous; legs whitish. Inhabits Bourbon, and is four inches and a quarter long.

**COMATA**. Black; beneath, rump, and tips of the middle tail-feathers white; vent yellow; head crested. It inhabits Ceylon. Its legs are blueish.

**HÆMORRHOUSA**; Red-vented Fly-catcher. Waved with brown, beneath white; vent red; subcrested head and tail black. There is a variety that has a yellow vent; tail black, with a white bar towards the tip. The first is found at Ceylon, and the second at Java. It is about four inches and a half long.

**PSIDII**; Guava Fly-catcher. Brown, beneath white; vent yellowish; crown, lores, and legs black; eye-brows white. It inhabits Manilla.

**MELANICTERA**; Yellow-breasted Fly-catcher. Head and cheeks black; back and wing-coverts grey-brown, varied with yellow; breast yellow; quill and tail-feathers black, edged with yellow. It is found in Ceylon; is the size of a goldfinch, and sings well.

**NITENS**; Green Fly-catcher. Green-gold; wings black; throat and breast rufous; rump and belly yellow; tail-feathers long, green on the outer, and black on the inner webs. It inhabits India.

**SINENSIS**; Wreathed Fly-catcher. Greenish-grey; head, bill, and legs black; chin white; throat and breast grey; belly and vent yellowish; quill-feathers yellowish-green.

**GRISEA**; Grey-necked Fly-catcher. Black, beneath reddish; throat grey; wing-coverts with a white band; tail a little wedged. It inhabits China; its legs are yellowish.

**FLAVICOLLIS**; Yellow-necked Fly-catcher. The upper part of this species is green; the crown and orbits yellowish; face black; throat and edges of the quill and tail-feathers yellow; the belly is greenish, with three yellow spots. It inhabits China, and is about six inches and a half long.

**FLAMMEA**; Flammous Fly-catcher. Black; back, left wing-coverts, breast, vent, edges of the secondary quill-feathers, and tips of the tail-feathers, orange. There is a variety, which is hoary, beneath scarlet; chin black; the first four quill-feathers are red at the base. It inhabits India, and is six inches long.

**FUSCESCENS**; Orange-vented Fly-catcher. Brownish, beneath whitish; head subcrested; rump and vent orange. It inhabits China, and is six inches long.

**LUZONIENSIS**; Black Fly-catcher. Black glossy-violet, beneath grey; wings with a white stripe in the middle. It is found in the Philippine islands, and in Madagascar, and is very small.

**PHILIPPENSIS**; Philippine Fly-catcher. Grey-brown, beneath whitish; eye-brows white. This is found in the Philippine islands, and is the size of a nightingale.

**CERULEA**; Azure Fly-catcher. Blue; hind-head and breast with a black spot; belly and vent blueish-white; quill



and tail-feathers dusky-blue. It inhabits the Philippine islands, and is five inches long.

**CYANOCEPHALA**; Blue-headed Fly-catcher. Red, beneath brownish; head blue; tail-feathers tipped with black. It inhabits Manila, and is the size of a linnet.

**MANILLENSIS**; Yellow-throated Fly-catcher. Hind-head and back grey; rest of the head and nape black; middle of the back bay; chin yellow; middle tail-feathers black, lateral ones white. It inhabits Manila.

**FLABELLIFERA**; Fan-tailed Fly-catcher. The upper part of this bird is olive, beneath ferruginous; eye-brows, chin, throat, sides of the neck, and lateral tail-feathers white; middle tail-feathers, head, and collar black. This species inhabits the southern isle of New Zealand, where it is seen constantly hunting after insects and flies, always with its tail in the shape of a fan. It is easily tamed, and will then sit on any person's shoulder, and pick off the flies.

**SUPERCILIOSA**; Supercilious Fly-catcher. This species is cinereous, beneath reddish-white; eye-brows black; tail wedged, the middle feathers black, the rest white. It is about four inches and a half long.

**CALEDONICA**; Oliv Fly-catcher. Olive, beneath yellowish-white; chin and vent yellow; quill-feathers ferruginous. It is found in New South Wales; is about six inches long, and its legs are black.

**LUTEA**; Luteous Fly-catcher. Whitish-yellow; wing-coverts and quill-feathers spotted with black; tail dusky towards the tip. It is found in Otaheite, and is six inches long.

**OCHROCEPHALA**; Yellow-headed Fly-catcher. Head, neck, and breast golden; body above yellowish-green, beneath white. It inhabits New Zealand, and is less than the last.

**FLAVIFRONS**; Yellow-fronted Fly-catcher. Yellow-olive, beneath yellow; front, eyes, edges of the blackish quill-feathers, and brown tail-feathers, yellow; arch over the eyes white. It inhabits Tanna island, and is five inches and a half long.

**NEVIA**. Black; middle of the back and shoulders spotted with white. It is found in New South Wales, and is more than eight inches long.

**MULTICOLOR**; Red-bellied Fly-catcher. Black; front white; breast and belly red; vent reddish. It inhabits Norfolk island, and is about four inches and a half long.

**SANDWICHENSIS**; Sandwich Fly-catcher. Brown, beneath and eye-brows whitish; breast ferruginous; wing-coverts, quill, and lateral tail-feathers tipped with white. It inhabits the Sandwich islands, and is five inches and a half long.

**OBSCURA**; Dusky Fly-catcher. Brown, beneath paler; tail-feathers long, even, pointed; belly inclining to rufous. This also inhabits the Sandwich islands, and is seven inches and a half long.

**MACULATA**; Spotted-winged Fly-catcher. This species is ferruginous, but beneath it is pale chestnut; quill-feathers black; wing-coverts with rusty-white spot near the tip; tail-feathers brown, the outmost tipped with white. It inhabits the Sandwich islands.

**TORQUATA**; Cape Fly-catcher. Black, beneath white; breast rufous; innermost quill-feathers tipped with white. There is a variety that is brown, but beneath it is white; the breast is black; the wings with a rufous band; tail-feathers tipped with white. It is about four inches long, and inhabits the Cape of Good Hope.

**BICOLOR**; Black and White Fly-catcher. Black; front, orbits, throat, rump, spurious wings, band on the greater wing-coverts, tips of the tail feathers, and body beneath

white. A variety is generally white; the hind-head, neck, wings, rump, and tail black. It inhabits Cayenne; is four inches and a half long. The female of the variety is wholly grey.

**CAROLINENSIS**; Cat Fly-catcher. Brown, beneath cinereous; head black; vent red. This bird is somewhat bigger than a lark; length eight inches; bill black; the upper parts of the body and wings are of a deep brown; the under ash-coloured; the crown of the head is black; the tail is blackish, and the legs are brown. It is found in Virginia in the summer season, where it frequents shrubs rather than tall trees, and feeds on insects. Its cry resembles that of a cat, whence the English name given it by Catesby.

**OCHROLEUCA**; Golden-throat Fly-catcher. Dirty-olive, beneath whitish-yellow; chin and edge of the wings yellow; primary quill and tail-feathers olive. It inhabits New York.

**NITIDA**; Nitid Fly-catcher. This species is of a pale green; wing-coverts edged with white; quill and tail-feathers blackish, edged with yellow. This is a small species, and inhabits China.

**ATRA**; Dark Fly-catcher. Olive-ash; breast cinereous; belly whitish-yellow; head, tail, and quill-feathers black; the secondaries at the edge and outmost tail-feathers on the outer webs white. This species inhabits New York, and feeds on bees.

**NOVEBORACENSIS**; Hanging Fly-catcher. Greenish; middle of the belly and two bands on the wings white; chin cinereous; spot on each side the bill and flanks yellow; primary quill and tail-feathers black, edged with green. It is found in New York from May to August.

**PASSERINA**. Blackish, beneath white; the tail is black. It inhabits Tanna, in the Pacific ocean.

**ACADICA**; Lesser crested Fly-catcher. Sub-crested, green-ash beneath, yellowish-white; wings with a double white band. It is found in Nova Scotia.

**AEDON**. This species is of a rusty-brown; but the under parts are yellowish-white; middle tail-feathers subequal, the outmost each side much shorter. It inhabits Dauria; and sings in the night very sweetly.

**NOVÆ HOLLANDIÆ**. Brown, beneath whitish; under the eyes, on each side, as far as the ears, there is a yellow streak. It inhabits New Holland, and is seven inches long.

**FERRUGINEA**; Rusty Fly-catcher. Brown-rufous, beneath whitish-yellow; chin white; wings black, edged with a rusty colour; tail-feathers beneath glaucous, above black, edged with brown; the outmost short and white. It inhabits Carolina, and is five inches and a half long.

**NIGRA**. This is totally black; bill, head, and legs dusky-black. It inhabits the Society islands.

**OCHRACEA**. Neck and breast ferruginous-ash; wings and tail black-ash. It is found at the Cape of Good Hope.

**ALBIFRONS**. This species is black-brown above; but the throat and breast are whitish; the belly is pale ferruginous; front whitish; its bill and legs are black. It inhabits the Cape of Good Hope.

**MELANOLEUCA**. This is of a snowy colour; but the feathers at the base are brown; the breast is of a palish-yellow; the head and neck, as far as the middle wings, tips of the tail-feathers, bill, and legs are black. It inhabits Georgia, in the summer months only, and is about six inches long.

**PETECHIA**. This is brown; but beneath it is cinereous, spotted with rufous; throat and vent rufous. It inhabits the island of Martinico, and is six inches and a half long.

**VIRGATA**; Streaked Fly-catcher. Brown, beneath whitish-brown, with longitudinal brown streaks; crown sub-



sub-crested, varied with cinereous and yellow; edge of the quill-feathers, and two bands on the coverts, rufous. It inhabits Cayenne, and is four inches and a half long.

**AGILIS**; Active Fly-catcher. Olive-brown, beneath whitish; quill and tail-feathers black, edged with olive-brown. It inhabits Cayenne, is the size of the *M. virgata*, and is continually hunting after insects, which it picks out from under the bark of trees.

\* **GRISOLA**; Spotted Fly-catcher. Brownish, whitish beneath; neck longitudinally spotted; vent pale-rufous; bill black, whitish at the base; inside of the mouth yellow; head large, brownish, and spotted with black; back mouse-coloured; wings and tail black; the former edged with white; chin spotted with red; legs black. About the size of the tit-lark; length five inches and a half. It inhabits this country, and others in Europe. This bird visits us in spring, and departs in September. It frequents orchards and groves, and will make its nest on the limb of some fruit-tree nailed against the wall, or in a hole, sometimes in out-buildings, on the end of a beam or rafter, and at other times against the body of a large tree, or on the stump of a decayed branch. The nest is formed of bents, moss, and such kind of materials, interwoven with spiders' webs, and lined with feathers. The female lays four or five eggs, not much unlike those of the red-breast, but rather less, and the rust-coloured spots more distinct, and not so much confined to the larger end. Its food seems to be entirely winged insects, though it is said to be particularly fond of cherries, probably from the circumstance of its frequenting the cherry-tree for the sake of flies that are attracted by the fruit. As soon as the young birds leave the nest, they are led by the old ones to some neighbouring wood or grove where insects abound, and where they may be seen darting in every direction in pursuit of flies, and frequently returning to the same station. The note of this species is a simple weak chirp, not frequently used till after the young are fled; so that the bird, though common, is not readily discovered.

**DICHROA**; Two-coloured Fly-catcher. Above cinereous, beneath ochre; tail-feathers partly ochre, partly cinereous. It inhabits Africa.

**DESERTI**; Desert Fly-catcher. Body ferruginous and footy; wings and tail blackish; bill yellowish. It inhabits the deserts of Arabia.

**JAVANICA**; Javan Fly-catcher. Tail very long, rounded; body varied with black and ferruginous, beneath white; throat black; eye-brows white. It inhabits Java.

**ALBA**; White Fly-catcher. White; head yellowish-sulphur. It inhabits round Stockholm.

**CAMBAIENSIS**; Cambay Fly-catcher. Glossy-black; back yellowish-green; beneath tawny-yellow; wing-coverts with a double white band. It inhabits Cambay.

**MUSCICAPA Madagascariensis**, &c. or Fork-tailed shrike. See **LANIUS Forficatus**.

**MUSCICAPA Tyrannus**, the Tyrant shrike of Latham, and Tyrant fly-catcher of Pennant. See **LANIUS Tyrannus**.

**MUSCICAPA Emerica**, the Bengal shrike of Latham. See **LANIUS Emerica**.

**MUSCICAPA Paradisi**, the Paradise fly-catcher of Latham. See **TODUS Paradisæus**.

**MUSCICAPA Rubra**, the Summer Tanager of Pennant and Latham. See **TANAGRA Esliva**.

**MUSCICAPA é Caruleo, Cinereo, Fusco, Luteo, Varia**, the Jamaica warbler of Latham. See **MOTACILLA Dominica**.

**MUSCIPETA**, the Stone-chat of Latham. See **MOTACILLA Rubicola**.

**MUSCIPULA**, in *Botany*, is used in a different sense

from the classical one, and derived from *Musca*, a fly. See **SILENE** and **DIONEIA**, where it occurs as a specific name, synonymous with Catch-fly, or Fly-trap: in the former instance alluding to the glutinous nature of the stems in several species of *Silene*; and in the latter to the peculiar structure and irritability of the leaves. *Muscipula* however always means, with the ancients, some sort of mouse-trap, from *Mus*, a mouse; and such may in general be the *μυαγρεα* or *μυαγρον*, as well as the *μυαγρος*, of the Greeks, but not, it seems, the *μυαγρος* of Dioscorides. See **MYAGRUM**.

**MUSCKA**, in *Geography*, a town of Lusatia, on the river Neisse; the chief place of a lordship, about 30 miles in circumference; 52 miles N.E. of Dresden. N. lat. 51° 31'. E. long. 14° 46'.

**MUSCLE**, in *Anatomy and Physiology*, is that soft and fibrous structure, generally of a red colour, known in common language by the name of flesh, and possessing the property of contraction, by which it becomes the instrument of almost all the motions in the living body. It consists of threads or fibres joined together by cellular substance: these are rendered very conspicuous in meat, which has been boiled for a long time. They are arranged in different forms according to the purposes to which they are subservient. Connected together in large masses, and united to tendons, which are fixed to the bones, they constitute the *voluntary* muscles. These compose nearly the whole bulk of the soft parts of the limbs, and a very considerable proportion of the trunk, and execute all the motions, which take place in obedience to the commands of the will. They fix the body, and determine the attitudes of its various parts in standing, sitting, and lying: they move it forwards in walking, running, jumping, dancing, swimming, climbing, &c.; and are the sole agents in seizing, holding, thrusting, throwing, &c. By alternately enlarging and contracting the chest, their assistance is essential in respiration; and these motions, together with those which they cause in the larynx and mouth, produce the voice and speech. They direct the eyes towards surrounding objects, and elevate or depress the lids: they open or close the mouth and nose. They are the agents of sucking, chewing, and swallowing, and are essentially concerned in copulation and parturition, in expelling the urine and fæces, &c.

Under another arrangement, in which they surround various hollow organs, they move the contents, whether solid or fluid, of such parts. In this way they drive the blood through the different cavities of the heart, and propel it in the arterial canals; they convey the food through the cavities of the stomach and intestines, and the urine along its passages.

Some motions are not executed by muscles: the elasticity of a cartilage, for instance, may restore it after it has been moved out of its natural state. It is still a controverted point whether the arteries are muscular (see **HEART**); and the veins certainly are not. Similar doubts exist concerning the iris (see **EYE**). We can detect no muscular fibres in the Fallopian tubes (see **GENERATION**), nor in the excretory canals of the glands (see **GLAND**). The motions of exhalation, secretion, absorption, and nutrition, are for the most part imperceptible to us, and the minuteness of the organs, in which they are performed, conceals them altogether from our researches: we have, therefore, no grounds for believing that they are executed by muscle.

According to the preceding view, we may state that the perceptible motions (excepting those of the iris and the large absorbing vessels) are performed by that kind of structure which we call muscle; while the movements, which escape our observation, are executed in a manner, of which we may rather



rather say we are ignorant, than that it is not effected by the medium of muscular structure.

The organisation of the different organs enumerated above, which perform motion, yet are not manifestly fibrous, has afforded an opportunity for much unserviceable controversy among anatomists, which might, perhaps, have been spared by a little attention to the meaning of the terms employed. If *muscle* be a tissue consisting of long, cylindrical, and parallel threads, possessing the power of contraction, muscularity must be denied to many parts of the body which perform motion: if the executing motion be a criterion of muscular structure, these parts must be ranked among muscular organs.

Hitherto we have considered the subject in a general point of view, regarding muscle as a structure capable of contracting, and thereby performing most of the animal motions: this power has generally been called irritability. A more close inspection will soon convince us that the muscular system must be divided into two great sections, differing from each other in their organisation, vital properties, external form and functions. In one of these motion is produced in obedience to volition; in the other it is independent of the will: in a few instances the two characters are united. Hence the muscles have been divided into *voluntary*, *involuntary*, and *mixed*. Yet their structure and properties have generally been considered together. Bichat has separated completely the voluntary and involuntary muscles: he makes of the former, the muscular system of the animal life, and of the latter, that of the organic life, according as they are concerned in the one or the other of the great divisions established by him in the animal functions. (See LIFE.) This arrangement appears to us to be the most conformable to nature, and we shall accordingly adopt it in the present article. We shall, therefore, divide it into two parts; of which the first will include the account of the muscular system of the animal, and the second of the organic life. The following order of subjects will be adopted in the first part: 1. The organisation. 2. The properties of the animal muscular system. 3. The application of the muscular fibres to tendons, composing the muscles. 4. Division, names, forms, and arrangements of the muscles. 5. Tabular view of the muscles. 6. Explanation of the plates. 7. Phenomena of the muscular system in action. 8. A view of the powers, by which the more general motions of the body are effected. 9. Development of the animal muscular system. In the second part we shall consider successively, 1. The organisation. 2. The properties. 3. The phenomena of action. 4. The development of the organic muscles.

I. *Organisation of the Muscular System of the Animal Life.*—The distinguishing character of a muscle is the muscular fibre; it contains, besides, blood-vessels, nerves, exhalants and absorbents, and cellular tissue, which are common parts; (we speak of those visible to the naked eye.)

The muscular fibre is slender, long, cylindrical, red, softish, of uniform size in the large and the small muscles; possessing every where the same characters and appearances; sometimes disposed in distinct bundles separated from each other by considerable grooves, but more generally arranged in a plane surface; always joined to numerous others of the same nature, and easily distinguishable by the naked eye. If we proceed to examine minutely any particular muscle, we easily separate it into a number of bundles, or fasciculi; each of these is again separable into smaller bundles, and this division may be repeated until the parts become too minute for our observation: they are distinguished throughout by the same fibrous or thready appearance, and the whole muscle differs from its smallest portion

only in the number of the threads. Infligated by the hope of discovering the mechanism of muscular motion, anatomists have examined the structure of these organs in every possible way, and have prosecuted inquiries into the organisation and properties of the ultimate fibre by the aid of the microscope, when the unassisted eye had traced their divisions as far as possible. Boiling for a long time, and immersion in spirits of wine, render the fibres more perceptible; they become smaller, harder, more opaque, and easily separable: but we still find nothing in them but threads of a uniform appearance, reducible into smaller and smaller bundles, in which the elementary fibre cannot be traced. We believe that the long labours of the numerous microscopical enquirers have not hitherto advanced our knowledge any further: and if it be true, as Soemmerring informs us, that Muys spent eighteen years in investigating the subject, we can only collect from his investigations, as detailed in the *Musculorum artificiosa Fabrica*, 4to. Lugd. Bat. 1751, that the physiology of muscular motion is not likely to receive any important elucidations from this quarter.

Microscopical observation shews us that the fibres pursue their course without bifurcation or any kind of division: they are placed in mutual opposition, and lie parallel to each other: hence much fewer fibres are divided by a perpendicular, than by a transverse section. It is not determined whether the fibres run through the whole length of a long muscle or no. Prochaska asserts that they do: Haller says that they turn aside after a short course among the neighbouring ones, and are lost in the cellular substance. In general they appear cylindrical; but sometimes they are more or less serpentine or undulated, particularly after boiling, or when observed soon after death: occasionally the line of the fibre is quite zigzag, or it has a knotted appearance. The connections by means of cellular substance, and the course of vessels and nerves, seem to be the causes of this appearance. The fibres are so small, that Muys estimates they would not transmit the 46th part of a red globule of the blood if they were hollow, and that they are forty times smaller than the slenderest human hair. On these points, however, a great variety of statements will be found in the reports of different observers. "Hæc omnia," says Haller, "multum habent ex arbitrio, et ex casu nata, cum alii ultimum, alii penultimum ordinem decrecentium fibrarum vidisse potuerint. Sed neque ullo modo probabile videtur, nos ultima elementa, et proxima organa motus animalis, oculis perspicere: aut octo ejusmodi continuos, veris limitibus distinctos, ordines esse, in quos fila filorum resolvantur." *Elem. Physiol.* t. iv. p. 416.

A great diversity of opinion has existed about the figure and appearance of the ultimate fibre, of the last threads, into which the muscular structure can be resolved. It has been a matter of dispute whether it be solid or hollow, cylindrical or flattened. Some have represented it as composed of vesicles or globules, some of a series of rhombs, others as cellular, &c. Leeuwenhoeck and Muys, whose researches seem on the whole to have been the most numerous and accurate, represent them as cylindrical, and sometimes, but rarely, knotted. When we consider that this is a point determinable only by the microscope, and remember how many sources of error such observations are exposed to, we shall agree with Haller; "Iterum, si quaestio fuerit de ultimæ fibræ fabrica, num solida, num cellulosâ fibrâ intercepta & facta, num denique tota instar tubuli cava sit, timidius certe oportebit de re ultra omnem oculorum aciem posita pronunciare." P. 418.

That the muscular fibres are a continuation of the nerves, under a different form and arrangement, or that they are hollow and prolongations of blood-vessels, are doctrines which



which have been maintained by very eminent men, and very generally received. These strange notions rest on no direct observations: they are vague and confused fancies, contradicted by well-known physiological facts, and repugnant to all analogy. The objects in question are beyond the reach of our senses: consequently we can procure no data for an opinion concerning them. Our study of nature should begin where it falls within the sphere of our organs. All that we know about the nature of the muscular fibre is, that it constitutes a peculiar tissue, not identical to that of the nerves, blood-vessels, tendons, or cellular substance. Where the organisation is the same, the properties must be the same. Now the properties of all these systems differ essentially, and their structure cannot therefore be analogous.

The muscular tissue is remarkable for its softness, and in this respect differs from the fibrous: hence it is very easily torn in the dead body; the mere weight of the limbs will sometimes do this. During life it is no less remarkable for its powers of resistance: it seems to acquire, when contracted, an augmentation of strength, that renders it capable, not only of bearing great violence, but of supporting enormous weights, rupturing the tendons, breaking the bones, &c. Ruptures of the muscles during life are very rare, but not altogether unexampled: we have seen three or four instances of it in the recti abdominis.

The chemists have exerted themselves very busily in the examination of the muscular tissue, and we refer the reader to their works, and to the chemical articles of the Cyclopædia on this subject. (See *FIBRE*.) We shall consider the matter here in a physiological view.

When cut into thin slices, and exposed to the air, the muscular tissue assumes a dark brown colour, becomes thin, hard, and brittle. When put into water a few days after being thus dried, it recovers its original softness and form, and has a lighter colour. When the muscular flesh is exposed in large masses, or to moist air, it putrefies very quickly, assuming a green or livid colour, and exhaling a putrid odour. A thick stinking pulp, after a certain time, holds the place of the fibres: this gradually evaporates, and leaves a hard, blackish, brown residue.

Cold water destroys the colour, and very rapidly if thin slices are placed in a current, or if they are frequently immersed and then squeezed; the surface only is whitened when a muscle is left in a jar of water. The fluid, which has been used in washing a muscle, is reddish: it contains the colouring matter with some gelatine, &c. No part of the animal structure loses its colour more readily than muscle. When kept in the same water, at a moderate temperature, its surface is reduced after a long time into a soft putrid matter. Sometimes, however, it is converted into a substance resembling spermaceti. This change is generally preceded by a reddish appearance in different spots on the surface of the muscle, which is the commencement of the decomposition. See *ADIPOCIRE*.

When repeated washings have removed the colouring matter of a muscle, there remains a white fibrous substance, from which we may extract by ebullition albumen, which rises in the form of froth, which grows firm on cooling, an extractive matter of a deep colour when concentrated, and some phosphoric salts. The residue is a greyish fibrous matter, insoluble in warm water, soluble in weak acids, yielding much azote under the action of nitric acid, and presenting all the characters of the fibrine of the blood. This, as Fourcroy has observed, is probably the peculiar nutritive substance of the muscle, which bestows the distinctive character on the organ, as the phosphat of lime does

on the bone. Whether this be found in the blood, and conveyed into the muscle, or be formed by the process of nutrition in the muscle, and thence carried into the blood, we have no means of determining. It seems to exist in very various degrees; and hence, probably, the varieties in the consistence of the muscular tissue. To this substance is owing the property, which a muscle possesses, of becoming corrugated under the action of heat, whether by exposing it to naked fire, or in boiling water. The quantity existing in the muscles is in proportion to that contained in the blood.

When muscles are boiled, connected with surrounding parts, an albuminous froth and some drops of fat arise, probably from the cellular tissue: a gelatinous matter is produced from the aponeurotic parts; and an extractive substance is set free, giving a colour and a peculiar taste to the fluid. The latter remains partly adherent to the fibres, and gives them a deep tint very different from that of raw flesh: the colour becomes lighter as the part cools. Certain salts are dissolved in the boiling, and add to the flavour of the broth: these are particularised by the chemists.

As the water approaches the boiling point, the muscular tissue, which had not hitherto undergone any change, becomes corrugated and condensed, and acquires very great additional firmness. Its condition may be compared to that of its contraction during life, and it will now support weight that would have broken it easily before it was boiled. This condensation of the muscular tissue is very rapid, and is at its highest degree at the moment of ebullition; it continues for a certain time and then gradually diminishes, the fibres becoming again soft, and more easily lacerable than they were at first. The muscle, however, does not go back to its original state; it has lost the power of corrugation by heat, alcohol, or acids; its taste is different; it putrefies less easily, and produces a different odour under that process.

Exposure to naked heat, as in roasting, changes the colour, consistence, and taste of the muscles, and destroys the power of corrugation by the agents already specified.

The muscular system is acted on very remarkably by the fluids of the stomach, and performs a very important office as the principal nutriment of carnivorous animals and man. See *DIGESTION*.

There are differences in the properties of muscles connected with the differences of sexes: this is known from their employment as food. The flesh of the male, in the rutting season, has a very peculiar odour, and a strong disagreeable taste. See *GENERATION*.

The cellular tissue is very abundant in the muscular system. (See *CELLULAR Substance*, and *MEMBRANE, Cellular*.) It forms round each muscle a stratum, which is generally loose, filled with fat, and easily distended with air in emphysema, or water in anasarca. In some instances it is more dense, and disposed in the form of a membrane; as for example, in the obliquus externus abdominis. Each fasciculus, and each fibre, down to the smallest perceptible divisions, has a covering, which becomes more delicate as the divisions are more minute. The quantity of the cellular tissue in the substance of a muscle varies greatly; it is generally the most abundant in the broad, and the large and long muscles. Those about the spine have but little. The general covering of the muscle fixes it to the neighbouring parts, while the pliancy of the cellular tissue enables it to yield readily to the motions in every direction. The coverings of the particular fasciculi and fibres attach them to each other, while the serum and fat of the cells facilitate their reciprocal motions.



## MUSCLE.

As the muscular fibres are all parallel to each other, the cellular threads uniting them pass at right angles to them, and have sometimes been taken for transverse fibres. We believe that all the fibres in the voluntary muscles are parallel to each other. Hence, if it be cut according to their course, the power of motion remains; but it is entirely lost if the section is carried transversely.

The fat is sometimes accumulated in a muscle to such a degree, that the appearance of the muscular fibres is almost lost. In animals which are fattened for slaughter, we often observe a considerable quantity of fat mixed with the fibres, which is never seen in the muscles of wild animals which preserve their native powers of exertion.

The arteries of muscles are very numerous and apparent; they enter towards the middle, rather than at the ends of the muscle, run at first between the principal fasciculi, and proceed, as they divide, along the intervals of the smaller divisions, until they end in capillary ramifications. In proportion to their bulk, hardly any organs receive more blood than the muscles. It gives them their peculiar colour, not by circulating in their vessels, but being combined with their tissue. Hence these organs are not changed in their appearance in asphyxia: if a muscle be divided in an animal dying in that state, black blood is thrown out from the arteries, but the muscular fibres continue red. The veins correspond to the arteries, and every where accompany them: they receive, from the contraction of the muscles, a pressure, which accelerates the stream of blood, as may be seen when a person on whom phlebotomy is performed moves his forearm and fingers. No effect of this kind is produced on the arterial circulation. As the muscular contractions assist in so considerable a degree the progress of the venous blood, these veins probably have few or no valves: certainly they are very little subject to varices.

Exhalants and absorbents exist in the muscles; but they cannot be demonstrated.

The nerves of the voluntary muscles are almost all derived from the brain, or from the spinal marrow; when they receive any branches from the ganglia, as in the neck and pelvis, they have others from the cerebral or spinal nerves. The muscles receive larger nerves than any parts in the body, except the organs of the senses; and in general the size of the nerves is in proportion to the bulk of the muscle; but this is not constant, the muscles of the eye, for example, receive very large ones. Small muscles have often only a single nervous branch, but the larger ones generally receive several. It has been remarked that the flexors have larger nerves than the extensors: the truth is, that the former muscles very greatly exceed the latter in size, and the great nervous as well as vascular trunks usually run along the limbs in the aspect of flexion, dispatching branches to the extensors. There is no reason for asserting that more nerve goes to an equal bulk of flexors than of extensors.

The nerves enter the muscles at various angles, and in all situations. They divide and run between the fasciculi, like the blood-vessels, and may be traced in this manner until they have become very minute. Whether they grow softer as they become smaller; whether the ultimate fibrils lay aside their external coat and assume a pulpy form; and whether every fibre of the muscle receives a nerve, are points which cannot be ascertained. The fact that the whole muscle is thrown into action by irritating the nervous trunk that supplies it, favours the affirmative side of the latter question; but the whole muscle contracts equally if a few fibres only are stimulated.

The nerves generally enter the muscles in company with blood-vessels, particularly arteries, and connected to them

by loose cellular tissue. They are rendered more apparent in the muscle by maceration, as they resist putrefaction for a long time.

II. *Properties of the Muscular System of Animal Life.*—There are no systems in the animal structure, in which the vital properties, and those resulting from organisation, exist in a more marked degree than in the subject of our present consideration. The physical properties, on the contrary, are weak; the tissue is soft, and offers very little resistance after death: the power, by which its functions are characterised, is derived from life.

1. *Properties derived from Organisation.*—Extensibility is shewn under various circumstances. When any part is moved, the muscles antagonising those that have moved it are stretched; all great flexions put in action the extensibility of the extensors, and *vice versa*. This phenomenon belongs to the muscular fibres only, and not at all to the tendons; hence the degree, in which it is possessed by any muscle, depends on the length of its fleshy fibres. Tumours, distentions of the abdomen in ascites, pregnancy, &c. occasion the exertion of the same property.

Contractility of tissue belongs to the muscles in a very considerable degree, and is constantly disposed to exertion when they have been extended beyond their natural length. It is independent of the nerves, and of the irritable nature of the muscles; influenced by life, but not necessarily connected with it; and depends essentially on the organisation. It acts in a slow and regular manner, and is diminished or increased only in proportion as the muscular tissue is strengthened or weakened. Hence the variations in its quickness can only be seen in different individuals, or in the same individual at different times; there are never such sudden changes in a short time as we see in the exertions of the vital properties; and this is a striking distinction between them. The contractility of tissue is seen in the recovery of the abdomen after paracentesis or parturition, in the return of parts to their original state after the evacuation of an abscess or the removal of a tumour. This property causes the two ends of a divided muscle to become separated from each other; and Bichat ascribes to it the attitudes which the limbs present, when they are not influenced by any muscular action. He observes, that in the middle state of a limb, between the two extreme points to which it can be moved, the antagonist muscles balance each other by their contractility of tissue. The part can be moved in either direction from this middle state only by the exertion of the vital powers of the muscles, and can be maintained in its new position only by the continued action of such powers. In this case the opposite muscles are stretched in a degree proportioned to the motion which the limb has performed; and the contracted muscle not only acts on the bone, in which it is implanted, but also on its antagonist. Hence the muscles reciprocally act on each other; they are alternately active and passive, moving and moved organs. A muscle, when thus stretched, is disposed to contract itself, and more, in proportion to the degree of extension: as soon as the vital powers cease to operate in the contracted muscles, the contractility of tissue of the antagonists carries back the limb to the middle state. Hence, says Bichat, whenever the muscles feel nothing of the cerebral influence, and are not irritated by any stimuli, as in sleep, and in the fœtus, the limbs are constantly found in a middle position between flexion and extension, abduction and adduction, &c. The horizontal extension of the trunk and limbs in fevers does not arise from any superiority in the extensor muscles, but from a deficient energy in the flexors, which cannot overbalance the weight of the limb.



## MUSCLE.

Hence such an attitude is a clear sign of general and alarming weakness.

Besides the retraction of the two ends, there is another effect following the division of a muscle: the contractility of tissue of the antagonist, being no longer opposed, draws the moveable part towards the opposite side to that on which the division has been made. Hence we find the mouth drawn towards the sound side in a case of paralysis; but the deviation is not so remarkable here, as when the muscle has been divided, because the contractility of tissue remains, and opposes the opposite muscles so long as the parts continue at rest. When the person endeavours to speak, and the muscles of the sound side are put in action, the deformity becomes more apparent. The contractility of tissue seems to be weakened in some instances of paralysis; but it is never entirely destroyed. Bichat divided the nerves of the leg in a dog; and cut off the leg some days after: the muscles retracted when divided.

The extent of the contractility of tissue is in a direct ratio to the length of fibres: hence the superficial muscles, which are the longest, always retract the most in amputation; the phenomena arising from this power during sleep are most apparent in the limbs, where the muscles are the longest; hence, too, antagonist muscles correspond in length to each other.

This power is weakened, but not annihilated by death; putrefaction alone completely puts an end to it. Bichat states, however, that the power of retraction in the muscles is greater, so long as they retain vital warmth, than after the coldness of death has seized them.

This contractility of tissue appears very nearly the same with the *vis mortua* of Haller. He calls it by that name, because it is exerted after death. "*Cæterum hæc vis cum vita nihil commune habet. Et si enim in humecta et flexili animali materie est manifestior, diu tamen a plena morte, inque excisis membris, in musculis, inque membranis integra superest.*" *Elem. Physiol. t. iv. p. 444.* To the same property he refers the phenomena arising from the action of fire, concentrated acids, alcohol, &c. on animal matter, which is corrugated and curled up by such applications. "*Ad hanc ipsam potentiam referre mortuæ irascibilitatis genus, quod venena chemica in omnibus partibus corporis humani demonstrant, potissimum etiam nitri spiritus fumans, deinde oleum vitrioli, et butyrum antimonii, et alia id genus. Acerrimi enim hi latices, cellulosa tela, cutem, eaque cellulosa tela compositas membranas, placentam uterinam, viscera, arterias, venas, etiam lacteas, ductus excretorios, sacculos urinæ et bilis, nervos, tendines, musculos ipsos, et cor, quando contigerunt, continuo cogunt in minorem longitudinem se recipere. Tela quidem cellulosa, cum ipso adipe, exeditur et consumitur, reliqua firmiora contrahuntur, fulco exarantur profundo, et arctantur, sicubi cava sunt receptacula, et in curvatem contracta; repunt quando longi et recti sunt funiculi.*" The effect of heat is analogous; that is, it causes a crispation and curling of the animal texture. Bichat has designated these phenomena by the term *racornissement*; and he points out several circumstances, by which they are distinguished from those which he ascribes to the contractility of tissue. The latter property exists in a very slight degree in several organs, which enjoy the power of *racornissement* very considerably; *e. gr.* the fibrous, fibro-cartilaginous, serous systems, &c.

It varies very much in different organs, from the muscles and skin, where it is the most sensible, to the cartilages, which hardly seem to possess it; while the latter is nearly uniform throughout the body. It is destroyed by drying, which does not affect the power of *racornissement*, as we may see

in leather and parchment: it receives an additional energy from life, particularly in the muscles, while the other is not modified by this cause. The contractility acts very gradually; the *racornissement* very suddenly: to feel the influence of fire, and become curled, are almost simultaneous phenomena. The latter produces a remarkable density in the organs, which they never exhibit under the exertion of the contractility. The cessation of extension is the only condition necessary to the exertion of contractility: the contact of a foreign body is necessary to the crispation of the tissue.

2. *Vital Properties.*—*Animal sensibility* exists in a very obscure degree in the muscles, at least in their natural state. We are not conscious of their contraction. When they are divided in amputation, or in experiments on living animals, no very considerable pain is occasioned, unless when a nerve is included in the cut. The irritation of chemical stimuli does not render their sensibility more apparent. Yet they are the seat of a peculiar feeling, produced by repeated or powerful contractions, and termed fatigue. This is felt in the muscles, which are principally employed in the action that has produced fatigue, as in the lumbar muscles after standing, in the muscles of the calf and the extensors of the knee, after walking or running up a hill, &c. It may take place without any previous exertion, as in fevers, where the patient has the same kind of lassitude, as would be produced by a long muscular exertion. When the muscular tissue is inflamed, the animal sensibility is exalted in a very remarkable degree; the weight of the bed clothes cannot be borne, and the slightest motion of the part produces the most lively pain.

*Animal contractility*, on which depend all the phenomena of locomotion and the voice, and which assists several of the internal and external functions, resides exclusively in the muscular system of the animal life, and forms its distinctive character. It consists in the power of moving under the influence of the brain, whether that be determined by the will, or by any other causes. In the exercise of this kind of contractility, and the corresponding species of sensibility, the action of the brain and the nerves is required, while the two kinds of organic contractility are concentrated in the organ that is moved. If we may be allowed such expressions, the brain may be called the source from which this property is derived, as it is the point to which all the sensations are conveyed: the cerebral nerves are the agents transmitting it, as they are in an opposite direction, conductors of the sensitive phenomena. In order, therefore, to gain a clear notion of this property, we must examine it in the brain, the nerves, and the muscles.

All the phenomena of animal contractility evince the influence of the brain. Its energy is augmented when the brain is excited by the passions, as wrath, by opium, or by wine: terror, which diminishes the action of the heart, and causes a kind of atony in the brain, and the various narcotics taken in excess, which have an analogous effect, cause a languor, or even a complete intermittence, in the voluntary actions of the muscles. When the brain is concentrated in its relations to the organs of sense, or in its intellectual functions—when we are looking or hearing very attentively, or employed in profound meditation or reflection, the voluntary powers all remain at rest.

In disease, all causes, which act powerfully on the brain, re-act suddenly on the animal muscular system, and produce paralysis or convulsions, of which the former indicates diminished, and the latter increased energy. The one is caused by compression of the brain, and by the consequences of apoplexy: it generally takes place at the commencement



mencement of hemiplegia, when the patient loses his senses and voluntary powers, and has all the signs of affection of the brain: the immediate attack subsides, but its effect remains, and is evinced by the immobility of one-half of the muscular system: the paralyzed side of the body is opposite to that of the injury in the brain. Various irritations of the cerebral organ, as spiculae of bone lacerating its substance, inflammation, tumours, &c. produce convulsions. Thus, says Bichat, we may figuratively call the animal muscular system the thermometer of the brain; the energy of the voluntary motions is directly proportionate to the state of that organ: in this point of view the muscles are to the brain, what the arteries are to the heart. When the compression of the brain ceases, the power of voluntary motion is restored. The results of physiological experiments on living animals coincide with the facts just stated. By tying all the arteries of the brain, voluntary motion is suddenly suspended, and death takes place. Injections of irritating fluids produce convulsions and then death. By mechanical or chemical irritations of the brain when laid bare, convulsions are produced. This effect, however, does not take place when the convex surface of the hemispheres is acted on: and it follows the more certainly in proportion as we come nearer to the basis of the organ. Compression of the exposed surface of the brain paralyzes the muscles.

We must, however, admit some latitude in our notions concerning the connection between the state of the brain and the muscular phenomena. When local affections of the head take place gradually, they may proceed to a great extent without affecting the muscular motions; as in collections of matter or pus, or in tumours. Sometimes, in such cases, the intellectual functions alone are disturbed; or the perceptive power may be affected. The brain has three great functions: it receives the impressions of the external senses; it is the centre of the voluntary motions; and it is the seat of the intellectual phenomena. It may be deranged in one of these respects, and perform the two other offices regularly.

We should infer, from what has been now stated, that acephalous fœtuses cannot live. As the animal life does not begin until after birth, these fœtuses grow and have all their functions regularly performed in the uterus. Respiration, which commences at birth, cannot be performed without the exertion of muscles, which derive their power from the brain, and consequently the child perishes. Yet there are instances, in which such children have lived for some time, in which they have breathed, cried, sucked, &c.; but in a few hours at most their existence terminated.

Placed at a distance from almost all the muscles, the brain communicates with them through the medium of the nerves, either directly, or by the intervention of the medulla spinalis. All the affections of the latter organ influence the muscles supplied by the nerves placed below the affected point. Compression or section of the medulla paralyzes, and irritation of it convulses the muscles. The higher the injury of the medulla, the more parts are influenced, and consequently the danger is the greater. If it be in the loins, the muscles of the pelvis and lower limbs only are paralyzed; if in the back, those of the abdomen are included, and consequently respiration begins to be affected; if higher, the intercostals are added to the number; and, if it be above the origin of the phrenic nerve, the diaphragm also is rendered motionless, respiration ceases, and death follows. Division of the medulla spinalis between the occiput and the first vertebra is so quickly fatal, that it has been adopted as a means of killing animals for food, and is termed *pitbing*.

We have similar proofs of the influence of the nerves on the voluntary motions. Irritation of a nerve, as by pricking or cutting it, by chemical stimuli, but more certainly by the former, causes contraction of the muscle supplied by it: that particular motion, which is the office of the muscle, as flexion or extension of a limb, &c. is performed. When several muscles are supplied by one nerve, they are all convulsed. The muscles, which have no branches from the nerve, are not affected; nor those which receive branches from it *above* the irritated point, *i. e.* between the brain and the seat of the experiment. A continuance of the irritation exhausts the muscles, so that they at last remain motionless; but the convulsions are removed, if the irritation be applied lower down in the nerve. If a nerve be compressed, tied, or cut through, the muscles supplied from it no longer contract under the influence of the will: they are paralyzed. Irritation of this nerve between the brain and the injured part produces no convulsions in the muscles situated beyond the injury: but irritation of the nerve below the injury causes contraction of the muscles for some short time: this effect, however, soon ceases. Remove the cause of compression, take away the ligature, and the power of motion returns; unless, indeed, which sometimes happens, the ligature should have disorganized the nerve at the point of its application. If a divided nerve should be afterwards united, the power of motion returns. Irritation of the brain, or of the medulla spinalis, produces no contraction in the muscles placed below the section of the nerve; but it convulses all the others.

All the muscles of the animal life are not equally influenced by the different states of the brain. Those of the limbs are the most readily convulsed or paralyzed; the muscles of the abdomen, of the neck, and particularly of the chest, exhibit these phenomena only when the causes of excitation or debilitation are carried to a high degree, and are often seen in a perfectly natural state, while those of the face and limbs are violently convulsed. In hemiplegia, the mouth is often drawn aside, and the limbs motionless, while the motions of the chest and abdomen continue. The muscles of the larynx are more easily affected than the latter; and hence the alterations of the voice. If we arranged the parts of the body according to the susceptibility of the muscles for receiving the cerebral influence; or of the nerves for propagating it (for we do not know on which of these principles the phenomenon rests), we should place the limbs at the top of the scale, then the face, the larynx, the pelvis and abdomen, and lastly the intercostal muscles and diaphragm. This scale bears a very important relation to the functions of the organs: injuries of the brain easily produce paralysis of the limbs, which merely deprives the animal of a mode of communication with exterior objects: if the muscles of respiration were affected in the same way, both the internal and external life would be suddenly interrupted.

The nervous influence is propagated only from the brain towards the muscles, and never in the inverse direction. Irritation of a nerve, or of the medulla spinalis, produces no contraction of the muscles placed between the brain and the point of irritation.

The muscles, destined to receive the influence of the brain through the medium of the nerves, must be in a natural state, so far as regards their organization, in order to perform their part in the series of phenomena that constitute voluntary motion. If they are inflamed, bruised, distended excessively, as by a tumour, &c. they cannot contract. It has been asserted, that a supply of blood is necessary to their performance of this function: the assertion



may be true, but it is difficult to afford experimental proof of it.

Steno stated that paralysis of the lower limbs immediately followed tying the abdominal aorta above its division into the two iliac arteries, and Bichat corroborates this by his own experience. No doubt was entertained that this experiment completely cut off the supply of blood to the lower limbs. In a very interesting experiment of this kind performed by Mr. A. Cooper, and recorded in the *Medico-Chirurgical Transactions*, vol. ii., paralysis did not take place; and as the limbs were fully nourished, and retained their natural warmth, we may conclude that the muscles received blood through the medium of the inosculating branches. It appears too, that red blood is necessary to the contraction of the muscles; and that they can no longer execute their functions when black blood is sent to them. (See LUNG.) When fluids different from blood are introduced into the vessels, the muscular action is not kept up: this is the case with water, oily and albuminous fluids, &c. and *à fortiori* with acrid irritating matters, such as urine, solutions of acids, alkalies, &c. Bichat found that the injection of these into the crural artery weakened and destroyed the motions of the limb. The result of his experiments varied according to the fluid employed: the effects on the moving power were more or less marked, from debilitation to complete suspension; but the deviation from the natural condition was always striking. The same physiologist tried the effects of various gases, brought in contact with the muscles by artificial emphysema, on their contractions. The animals were not incommoded by these trials: oxygen did not excite or accelerate, hydrogen and carbonic acid did not diminish the contractions; and the gases themselves were gradually removed. Emphysema produced with nitrous gas is constantly mortal: its contact seems to strike the muscles with a sudden atony. Various fluids introduced into the cellular substance produce different effects on the muscles, according to their mild or acrid properties, &c.: none have a more sudden or considerable operation than opium. When applied in solution, it quickly paralyzes the muscles. It produces relaxation in a contracted muscle. Probably several causes, besides those enumerated above, are capable of affecting the muscles: for example, mercury, lead, and copper act on the workmen of manufactories; cold and certain fevers greatly influence the muscular powers, &c. The tremulous motions observed in those cases do not seem to have their cause in the brain, for there is no sign of affection of that organ: whether, however, they depend on the muscles or nerves, is not easily decided.

We have just seen that three things are necessary in the exertion of the animal contractility: 1, an action of the brain; 2, of the nerves; 3, of the muscles: the principle of motion resides in the brain, it is conveyed along the nerves, and received by the muscles. But the brain must receive some impulse to determine it to exert its influence. As the animal contractility is exercised only at intervals, whenever its action has intermitted, some new cause must be applied to call it again into exertion: in the natural state this cause acts first on the brain.

These causes are the will, and the impressions made on the brain, independently of the influence of the mind. The production of motion in consequence of volition must be so familiar to every individual, that it needs no illustration. We may only observe that the motions are regular and precise while the intellectual functions are perfect, while the perception, the memory, and the imagination are exercised naturally, and the judgment directs with regularity the acts of the will: they have an opposite character when these

functions are disturbed, as in the various kinds of mental derangements in dreams, delirium, &c.

When we speak of the production of motion by volition, of the power or energy of the will, &c. these expressions are not to be understood as conveying any other fact than the simple connection of two events. How they are connected is entirely unknown to us. The anatomist indeed is aware that the brain, nerves, and muscles are essential in this operation; but the volition, that act of the mind, of which we are conscious, is just the same in him as in the person who does not know that the body contains brain, nerves, and muscles. We will to bend the elbow: this is effected by a contraction of the biceps and brachialis internus muscles, to which our thoughts are not at all directed. In Mr. Hume's "Essay on the Idea of necessary Connection," this matter is explained with great clearness: we shall make a short extract from it. "A man suddenly struck with a palsy in the leg or arm, or who had newly lost those members, frequently endeavours, at first, to move them, and employ them in their usual offices. Here he is as much conscious of power to command such limbs, as a man in perfect health is conscious of power to actuate any member which remains in its natural condition. But consciousness never deceives. Consequently, neither in the one case, nor in the other, are we ever conscious of any power. We learn the influence of our will from experience alone. And experience only teaches us how one event constantly follows another; without instructing us in the secret connection, which binds them together, and renders them inseparable.

"We learn from anatomy, that the immediate object of power in voluntary motion, is not the member itself which is moved, but certain muscles and nerves, and animal spirits, and perhaps something still more minute and more unknown, through which the motion is successively propagated, ere it reach the member itself, whose motion is the immediate object of volition. Can there be a more certain proof, that the power, by which this whole operation is performed, so far from being directly and fully known by an inward sentiment or consciousness, is to the last degree mysterious and unintelligible? Here the mind wills a certain event: immediately another event, unknown to ourselves, and totally different from the one intended, is produced: this event produces another, equally unknown: till at last, through a long succession, the desired event is produced. But if the original power were felt, it must be known: were it known, its effect must also be known, since all power is relative to its effect. And, *vice versa*, if the effect be not known, the power cannot be known nor felt. How indeed can we be conscious of a power to move our limbs, when we have no such power; but only that to move certain animal spirits, which, though they produce at last the motion of our limbs, yet operate in such a manner as is wholly beyond our comprehension?"

In the other class of causes, motion takes place without the participation of the will, or even in opposition to its determinations. We see this in experiments, when the organ is irritated, in great determinations of blood to the head, in inflammation and injuries of the part, &c. The motions exhibited under these circumstances are involuntary, although they take place in parts habitually subject to the will; and they are produced by the direct application of a mechanical cause. But in other cases the brain is affected only by sympathy, a term which conveniently substitutes an appearance of knowledge in the place of our real ignorance of the relations existing between different organs. We may have delirium, convulsions, &c. without any discoverable mechanical action on the brain, and appearing merely as



## MUSCLE.

concomitant symptoms of some other disease. Here the will has nothing to do with the muscular contractions: the patient cannot restrain the convulsive motion;—the sympathetic irritation of the brain is stronger than the influence of the will.

To a sympathetic influence exerted on the brain, by the interior organs, Bichat refers the effects of the passions in exciting or depressing the muscular powers. He conceives that they act in the first place on the parts about the epigastric region, as the heart, liver, stomach, spleen, &c.; that these re-act on the brain, which excites the muscles, and gives to their exertions an impetuosity, which the will is often unable to controul. This is exemplified in men actuated by jealousy, hatred, rage, &c. Other passions have the directly contrary effect of weakening all the muscular motions: we see this strongly in fear, it is also observable in the surprise accompanied by grief or by joy, &c.

Thus we see that the animal contractility either may or may not be subjected to the will; that the series of phenomena in the brain, nerves, and muscles is the same in both instances, and that the only difference is in the cause exciting the brain, which may be either the will, or an irritation directly applied to the organ, or a sympathetic irritation.

The animal contractility continues for some time after apparent death. The intellectual functions always cease first, however death may come on; and the notion of the departure of life is particularly attached in popular acception to their cessation: consequently muscular contraction in obedience to the will is at an end. Still convulsive contractions of the muscles may be produced by irritating the brain, spinal marrow, or nerves; and often this phenomenon is more apparent immediately after death than it was before. In the latter case the influence of the will upon the muscles may interfere with the result, which cannot be disturbed by any such cause in the former. Some birds, as ducks, geese, &c. will run and jump after decapitation; the limbs sometimes exhibit slight motions, and the muscles of the face contract after execution by the guillotine; and these phenomena may be rendered much more sensible by irritating the divided end of the medulla spinalis. The animal contractility ceases after death first in the brain, then in the medulla spinalis, and lastly in the nerves; that is, we can excite contraction by irritating the two latter when we can no longer accomplish it by irritating the former; and a similar observation holds good of the medulla and the nerves. The diaphragm continues longer obedient to these irritations than any other muscle; whereas during life it is little affected by the state of the brain, and hardly ever paralysed or convulsed. The effects of different irritants continue for a longer or shorter time: galvanism still acts forcibly, when mechanical or chemical agents produce no farther influence.

The effects of galvanism on the muscular system excited, when they were first noticed, considerable attention in the minds of physiologists, as they were supposed to offer a solution of the phenomenon of muscular motion. More extensive and accurate inquiry seems to justify us in referring the phenomena noticed by Galvani, and the more powerful exhibition of them in the voltaic apparatus, to electricity. (See GALVANISM.) We regard them now only as examples of electrical irritation of the muscles, and acknowledge that they leave the problem of muscular motion in all its original obscurity. In order to exhibit them, it is necessary to place the muscles between the two ends of a galvanic apparatus. The most simple form of the experiment is to lay the hind leg of a frog, with the skin stripped off, on a piece of zinc, and another of silver, so that one extremity shall rest on the former, and the other on the latter metal, all the apparatus being moistened: when the two metals are brought into

contact, or when they are united by a metallic arc, convulsions are produced. If the nerves be in contact with one metal, while the muscles rest on the other, the phenomena are also produced by their contact; but the intervention of the nerves is not necessary. When the nerves are made a part of the circle, the convulsions take place, although they should be tied or even divided, provided in the latter case the divided ends are in contact. The pile of Volta, and the subsequent improvements on it, afford the means of producing these phenomena with greater energy. If a wire from one end of the apparatus be placed in the mouth of an animal just killed, while that from the opposite end is placed in the rectum, the parts being moistened, the whole body is convulsed: or the medulla spinalis, and any of the muscles of the body, may be treated in the same way. In this mode of operating, the eyes and eyelids, lips, tongue, &c. may be made to move after decapitation: these phenomena at first excited great general curiosity; but the philosopher perceives in them nothing more than an example of the well-known operation of electricity. If the body is kept warm, these contractions may be produced for one, two, or three hours after death; but, as it cools, the power is lost. The susceptibility is weakened or entirely destroyed by alcohol or opium: when it is nearly exhausted, immersion in oxygenated muriatic acid restores it. Humboldt found it greatest in the spring in frogs, in young individuals, and in the front limbs of the male, by which it seizes and holds the female in their long copulation, while the hind legs of the female are the most susceptible. It is very great in animals killed by repeated discharges of an electrical battery. Asphyxia by strangulation, by drowning in mercury, by pure and carbonated hydrogen, oxygenated muriatic acid, and sulphurous acid gases, and the air-pump, do not weaken it: drowning in water, death by breathing sulphurated hydrogen, azote, ammoniacal gas, and the vapours of charcoal, entirely annihilate it.

Phenomena similar to those produced by the metals may be witnessed sometimes without their being employed at all. Detach the lumbar nerves from their surrounding connections, and bring them in contact with the muscles of the thigh in the frog, and convulsions are produced.

3. *Organic Properties.*—Organic sensibility clearly belongs to the muscles of the animal life, and is called into constant exercise in them by nutrition, absorption, and exhalation. It is rendered still more apparent by exposing and irritating them: they feel that irritation, and the motion, of which we shall speak presently, is the result of such feeling, which is concentrated in the muscle, and not referred to the brain.

Insensible organic contractility belongs to the muscular as to all other systems.

The sensible organic contractility is very manifest in the present system. If a muscle be exposed in a living animal, and irritated, it is contracted, and agitated or thrown into a tremulous motion. The same phenomena are produced after apparent death, and that for a considerable time. They are produced also in a muscle, or in a part of one removed from the animal.

Almost every thing acts as a stimulus on an exposed muscle: *viz.* air, water, neutral salts, acids, alkalies, earths, metals, animal and vegetable substances, electricity, whether of the common or voltaic kind, &c. Simple contact is sufficient to produce contraction; but, besides this, there is something depending on the nature of the stimuli, and causing a variation in the intensity of the contractions. Powdered wood, charcoal, or metal, produce but slight motions; a salt causes strong agitations, and various oscillations of the part. Every substance affects the muscles differently,



## MUSCLE.

differently, according to its nature; and these organs are differently acted on according to the age and temperament of the individual, the climate, season, &c.

It is not necessary to irritate the whole muscle in order to produce its contraction: a single puncture, affecting a few fibres only, will throw the whole into action. Often, in performing these experiments on animals, the contraction is communicated from one muscle to another.

In a living animal the contraction is often not so vigorous, nor so strongly marked, as just after death: sometimes, indeed, during life, irritation produces no contraction. The nervous influence, the power of the will, interferes with and disturbs the contraction. By dividing the nerves of the part, this power is entirely got rid of: the permanence of the sensible organic contractility after such an experiment, as well as after apparent death, or paralysis, in which the influence of the brain is equally annihilated, marks the distinction between this property and the animal contractility, and shews that the former is inherent in the muscular tissue.

The contraction of the animal muscles from the application of stimuli is exhibited under two very different forms: it either affects the whole of the muscle, so as to approximate the two points of its insertion, as when death has occurred recently; or it produces numerous oscillations of the fibres, and a general vibration or trembling, which does not draw together the points of attachment. The latter phenomenon occurs when the vital powers are nearly extinguished.

The sensible organic contractility is seldom exerted during the life of the animal; so that we are at a loss to account for its existing in this texture in so high a degree. All muscles do not possess it equally: the diaphragm and intercostals are the most irritable, and retain this property for the longest time after death.

On the subject of the vital powers, by which the muscles are enabled to execute their functions, physiology is greatly indebted to the experiments and writings of Haller. He distinguished the property, by which the muscles contract under the application of stimuli, from the *vis mortua* on the one side, or the contractility of tissue, and from the *vis nervosa* on the other, or the power of moving under the influence of the brain; and he gave to it the name of *vis insita*, or *vis musculorum propria*. It had been called by Glisson irritability, tone by Stahl, *vis vitalis*, oscillatio, &c. by others; but was generally confused with the other vital powers. The views, which were taken of the subject by Haller, will appear from the following quotations from the eleventh book of his *Elementa Physiologiæ*. "In animalis vivi, five nuper omnino extincti, carne musculosa, sæpissime sponte apparet motus contractilis, velox, vividus, quo lacerti musculosi alterne ad medium ventrem adducuntur, et alterne ab eo medio recedunt.—Cum hæc vis et ab elatere diversa sit, et a mortua illa contractione, omnibus fibris communi, peculiarem omnino potestatem constituere videtur, propriam fibræ animalis, et quæ ejus fibræ characterem constituat, ut et omnis fibra musculosa sit irritabilis, et contra, quod irritabile est, fibræ musculosam esse possis pronunciare. Propria autem vis est, ab omni alia potestate distincta, et referenda inter fontes generandi motus, quorum ulterior causa ignoratur; eademque in ipsa fibra insita non aliunde advenit.—Separari quidem irritabilem naturam hinc a vi mortua, inde a vi nervosa, et ab animæ potestate. Ab ea motum cordis, et intestinorum irritabilem naturam unice pendere ostendi. Ad muscularem fibræ unice reduxi. Ostendi porro, eam vim quidem perpetuo vivam adesse, et sæpe nullo, certe qui nobis notus sit, stimulo externo indigam in motum erumpere; a stimulo tamen, quoties quievit, facillime revocari." Sect. 2.

It will probably be expected that we should take some

notice of the speculations of physiologists concerning the cause of muscular motion: we shall advert very shortly to this subject, on which the reader will find more copious details in the *Elementa Physiologiæ* of Haller, lib. ii. sect. 3, because we are of opinion that the time consumed in such investigations has hitherto been worse than lost: it has not only thrown no light on the subject of inquiry, but has drawn men away from the only path by which they could arrive with certainty at a knowledge of the muscular system, namely, observation of the phenomena. "Iterum," says Haller, "in hypothesi invitatus mergor, non quod propriam aliquam conjecturam habeam, quam exornem, sed quod ad inveniendos fontes admirabilis illius potentie vivarum carni potius per speculationes aditum sibi, quam per experimenta, fere scriptores physiologici paraverint."

Our knowledge concerning muscular motions amounts to this, that certain physical changes are produced in the fibres under the action of certain causes: these changes we call contraction and relaxation. When we say that a muscle acts by virtue of its irritability, contractile power, or contractility, we merely denote this fact, and express these phenomena in a general word: we know no more of this irritability, what it is, or how it is brought into exercise, than we do of attraction, or the force by which the phenomena of dead matter are regulated. This view of the subject coincides nearly with the sentiments of Haller: "Causam quidem neque mechanicam hujus potestatis quæro, neque omnino physicam, qui persuader, propriam et innatam fibræ animalis vim esse, cujus non aliam porro causam quærere oporteat, five nunc unice sortior fuerit contractionis mortuæ gradus, five alia vis, ut ex eo possis arguere, quod mortua vis omni fibræ animalis et vegetabili, hæc certe in animato corpore fibræ musculari propria sit."

Nothing appears more evident than the distinction between the two kinds of motions ordinarily designated by the epithets voluntary and involuntary: yet a very numerous sect in physiology, the followers of Stahl, deny the existence of any original difference in this instance, and refer all the motions in the human body to the mind or soul (*anima*): this produces all motion, and guides it by wise design to the production of certain ends. It governs the body, after forming it in the uterus of the mother, and is the agent of reparation after injuries. They hold that all motions, even those of the heart, were originally voluntary: and they cite the case of colonel Townshend, related in Cheyne's *English Malady*, p. 307, who is said to have been able before death to suspend and renew at pleasure the action of the heart. They ascribe the loss of voluntary power over the heart to habit, which has destroyed the influence of the will on the motions of the iris and palpebræ, and other voluntary organs; and assert that repetition is attended with the loss of consciousness in these cases, so that the reflex operation of the mind is not perceived. They think that the mind would be able to move at its pleasure the intestines and heart, if it could see them. They cite the operation of the passions on the heart. Fevers and diseases are the efforts of the mind (*anima*) against evils which threaten the body. They discern the operations of a designing intelligence (*providentis animæ consilia*) in crises, in the salutary augmentation of secretions, and lastly, in sleep, which they regard as a voluntary rest granted by the mind to its body, lest perpetual exertion should wear out its powers.

The consciousness of the heart's action is lost in consequence of its familiarity; as is the case in some obviously voluntary motions, when they have been very frequently repeated. Men immersed in thought walk, eat, and perform many other actions without being conscious of them.

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The exertion of the will on the brain in playing on a violin is very obscure. They conceive that the mind regulates the internal organs "*intellectu puro, absque reflexione et ratiocinio*;" but that it performs our communications with external objects "*cum actu reflexo, sive cum conscientia suæ sensationis & actionis*." From these and such considerations the Stahlian school assert that irritability is the protecting power of the mind against stimuli that affect it unpleasantly, by which, with a more or less strongly marked feeling according to the amount of the cause, it produces a contraction of the fibres for the removal of that cause. Hence that no motion takes place without sensation, nor without the participation of the mind; and that not only those contractions which are caused by irritating a muscle, but all others, even such as occur from the mere recollection of an unpleasant object, as in vomiting, proceed from the mind.

It appears to us, that in these opinions objects which are the most unequivocally distinct, are confounded together; that the term mind, or anima, is employed in a very indefinite or obscure sense; and that the assertions are most obviously repugnant to every man's experience, if this word, as the authors apparently mean, should be deemed synonymous with will.

That the mind, when intent on any thing that powerfully interests it, is not conscious of many slight impressions, is well known; and in such cases consciousness and voluntary action seem disjoined: but let this more important occupation cease, and the slightest impressions are immediately perceived. In playing a musical instrument too, as well as in many operations in the arts, the motions are so rapid, that we find it difficult to allow that there can be a distinct volition for each: neither are we conscious at any time of the particular muscles employed. But the motions cease, as soon as the will to move is discontinued, and begin again when that is renewed. Either of these cases is most obviously distinct from the action of the heart or intestines, in which the closest observation can discern no sensation, and the most resolute exertion of the will cannot modify the motion.

The supposition that the actions of the involuntary organs are at first voluntary, and are continued by habit without the exertion of the will, is inconsistent with what we see in respiration. That is a function necessary to life, yet performed by voluntary powers: we can accelerate, retard, or suppress it. This dominion of the will is never lost; the necessity of the function to life, or the invisible structure of the diaphragm, has here no effect. The heart, on the contrary, of which the office is so closely connected to that of the lung, and the motion of which is perceptible to the touch, has never been excited or retarded in its action by any individual: we know too little of the case of colonel Townshend to admit it as an exception to the otherwise invariable testimony of experience. It does not explain the matter to say that we do not see the heart: for we do not see the diaphragm in the preceding case; nor can we influence the motion of the penis which we do see, nor of the intestines when protruded from the abdomen in various ways.

It has been asserted that the emotions of the mind influence the heart, and that as the mind influences these, it must therefore operate on that organ. That wine, poison, or an affront, will accelerate the heart's motion is most true; but these are not voluntary affections; we cannot avoid being drunk, when we have taken wine, nor can we help being angry when we are irritated.

It is not true that habit confounds the classes of volun-

tary and involuntary motions: the former are all equally subject to the will in the infant, boy, and adult. No voluntary muscle is ever removed from the dominion of the will, while life continues. Although we move the upper eyelid frequently without perceiving it, yet we perceive it as soon as we attend; we can moreover move it more or less frequently as we choose: by exercise we can hold it quiet when an object is brought suddenly before the eye. On this analogy, then, the habit of contraction ought not to make the heart an involuntary power, if it had been a voluntary one in the fœtus. The peristaltic motion is interrupted for months in hibernating animals; the iris does not contract in a dark place, nor does the penis move in an individual who does not see or think of a woman: on the application of proper stimuli, all these parts move, yet they are as much out of the controul of the mind or will as in animals where they are constantly exerted.

We may therefore most truly affirm, with Haller, "*Æterna lege separatur voluntatis imperium ab irritabilitatis provincia. Nemo mortalium unquam, ullo exemplo, voluntate sua aut in cor, aut in intestinum, aut in ventriculum, aut in arteriam, aut aliud in vitale organum arbitrium exercuit ullum, neque eos motus vel excitare didicit, vel retardare, vel accelerare, vel suppressere. Nemo mortalium in musculis voluntati obnoxiiis, si sani fuerunt, desideravit obsequium quod prælerent voluntati. Eos omnes musculos et ad motum cedere novimus omnes, et in motu incitare, et vicissim morari, ad quietem denique jubendo reducere*." Lib. xi. sect. 3. and 8.

That fevers are excited by the command of the mind is asserted without any proof; and the total want of power in the will over critical evacuations, &c. is too obvious to require mention. The accelerated action of the heart, the convulsions, &c. produced from injury or disease, are so far from being adapted to the purposes of remedy or restoration, that the physician endeavours to lessen them by every means in his power.

That any obscure sensation causes the motion of the heart is asserted contrary to the testimony of sense itself. When intently occupied, we either do not perceive or do not retain in our minds the slightest impressions: but we are immediately conscious, even of the most gentle impulse of the air, when we turn our attention to it exclusively: how then does it happen that no man ever felt the four ounces of blood rushing into his heart, nor could ever perceive any difference between the systole and diastole of that organ? Further, the heart when removed from the body still contracts, when all suspicion of sensation must surely be removed.

To the notion of the formative power, exercised by the mind in composing the new being, Haller has very justly replied, "*Structricem animam quis credat, qui imperitissimum animalium, incredibilis artificii corpus, perinde ut sapientissimum mortalium, struere videat; qui nullam diversitatem in recta fabrica corporis infantis nunquam sana mente usi videat, et infantis in Newtonum convallituri? Frequentissimum hic mihi obversatur animo exemplum fatui generis hominum, quo vicina Valesia abundat. Li ad omne vitæ humanæ officium inepti, vel in aprico sole humana dignitate manifeste minores sessitant, vel in lectis cubiculorum fere immoti, tota vita sua decumbunt. Nihil unquam mihi vel a poeta visum est minus credibile dici, quam hanc animæ, adeo sero, adeo modice sapientis, æmulam divini creatoris potestatem: si enim plantas Deus fabricatur, digniora plantis animata corpora ipsa struit sibi anima*." Ibid. sect. 9.

The reader will find a more ample disquisition of this subject,



## MUSCLE.

subject, and of other hypotheses concerning muscular motion, now nearly forgotten, in the eleventh book of the *Elementa Physiologiae*. Haller's own idea, which has been very generally adopted, but which we confess appears as little instructive as any other, is that the unknown nervous fluid, of almost infinite subtilness and velocity, acts as a stimulus on the elements of the muscular fibres, as the electrical matter excites motion in these fibres, independently of the will. Not that both these fluids are the same, but that they agree in the velocity of their course, and in the power of penetrating all the elements of the bodies, in which they reside.

The inadequacy of all the attempts at solving this interesting problem is manifest from the constant fabrication of new hypotheses. No sooner is any great discovery made in physics than an application of it to physiology is brought forwards. Thus oxygen and galvanism have been pressed into the service on this occasion. A modern author on physiology represents as the most ingenious and strongly supported of all the hypotheses, devised for the purpose of explaining the phenomena of muscular action, that which makes it depend on the combinations of the hydrogen, carbon, azote, and other combustible substances in the muscular fibres, with the oxygen brought by the blood of the arteries. To effect this combination, says he, it is necessary, not only that arterial blood should bathe the muscular flesh, and that oxygen should be brought into contact with the substances with which it is to unite, but also that a nervous current should traverse the tissue of the muscle and produce the decomposition, as the passage of the electrical spark through a mixture of oxygen and hydrogen produces water. (*Richerand Elements de Physiologie*, sect. 162.) If this be the best of the hypotheses, we may allow the rest to pursue their journey without obstruction to the tomb of all the Capulets.

*Sympathies*.—Convulsive motions of the animal muscular system attend various affections of our organs, particularly in children. Animal contractility is the predominant vital property in this system, and is therefore most frequently called into action in sympathies. Convulsions are particularly frequent in the affections of our organs accompanied with great pain; there are indeed very acute pains unattended with sympathetic convulsive motions, but convulsions are rarely observed, except in cases where the organ originally affected has its animal sensibility very strongly developed. From this view, which we have given, of the part which the brain performs in animal contractility, we must conclude that the sympathies, in which that property is called into action, take place through the medium of the brain. Next to the animal contractility, the sensibility of the same kind is the property most frequently called into action in sympathies. The lassitude, the feeling of weight, the vague pains experienced at the attack of many diseases, are examples. The organic properties are seldom sympathetically exerted; or, if they are, the fact is not indicated to us by any sensible signs.

*Tendons*.—The muscular fibres, which are the moving powers, are not in general applied immediately to the bones, which are the parts moved. The skeleton would not afford a sufficient surface for this purpose: indeed, in most cases, a very small part only of the fleshy fibres could be directly implanted in the bone. Instead of this they are fixed to fibrous organs, which are implanted in the bones. Some muscles, which have no long attachments, as about the face and pharynx, have no tendon in their structure: but where the muscle, as is the general case in this system, is fixed at both its ends to bones, a considerable portion and very fre-

quently the whole of its attachments is tendinous. An example will shew in the most striking manner the advantage, connected with the tendons, of bringing an increased quantity of fibre to bear on a particular point of bone. The vasti and cruralis, the principal extensors of the knee, cover by their origin, which is in great measure fleshy, nearly the whole body of the thigh-bone: had they been inserted by muscular fibres, they must have covered the whole tibia. The tendon, by which they are attached, is fixed to a surface of about three quarters of an inch long by one quarter broad: and the rest of the bone remains for the origins of muscles moving the foot and its different parts. The fibrous system, so far as it is connected with the muscles, is seen in two forms; either in hard and thick cords, called tendons; or in broad and thin plates, called aponeuroses.

The latter are often condensed into the former: that is, an aponeurosis of several inches in breadth, receiving muscular fibres in its whole surface, may be contracted into a tendon not broader than the finger. In this case, the fibrous texture, which is expanded in the one, is condensed in the other, and the only difference is in the form.

The organisation of the tendons, and their properties, have been already explained in general, under the article *Fibrous System*.

The *aponeuroses* admit of being divided into three kinds. 1. Those which possess a broad surface, are very numerous: they are sometimes formed by the expansion of a tendon, as in the rectus extensor cruris; sometimes, as in the masseter, they come immediately from the bone. They may receive muscular fibres on one side only, or on both. In the latter case they form septa, placed between muscular fasciculi, which they separate from each other and yet unite into one organ. They always receive the insertion of the muscular fibres in a very oblique direction.

The advantage, which we have mentioned as belonging to the tendons in general, of multiplying the points of insertion for muscular fibres, is very obvious in these aponeuroses. The whole of the temporal ossa would not be sufficient for the attachment of the masseter, if it were effected by separate fibres: the aponeurotic septa in its substance receiving the fibres, and then fixed to the bone, concentrate the insertion in the edge of the zygoma. All the very powerful muscles, which must consequently possess numerous fibres, are intersected by similar aponeuroses.

These organs in their nature are identical to the tendons; many are continuous with them, the fibres following the same general direction, but spreading out in the aponeurosis. Their fibres are in general not interwoven, as in the fasciae, but follow one direction.

By macerating a tendon for a short time, it is softened, and may be stretched laterally so as to assume a form exactly like that of an aponeurosis.

2. When a large vessel passes under a muscle, it is covered by an aponeurosis in an arched form, so that the origin of the muscular fibres is not interrupted: these however are not numerous. They may be seen in the diaphragm, over the course of the aorta, and in the soleus, at the passage of the posterior tibial artery. The muscular fibres are implanted in the convexity, and the passage of the vessel takes place under the concavity of the arch, the two extremities of which are fixed to the bone. If the action of the muscle has any effect on these arches, it must rather enlarge than diminish the openings under them, as the fibres draw upon the convexity of the arch.

3. Aponeuroses formed of insulated fibres. These consist of a vast number of small fibrous bodies, distinct from each other, separately attached to the periosteum, and continued



tinued into the substance of the muscle. This is a mode of insertion requiring broad bony surfaces.

The tendons are commonly situated at the extremities of muscles; but sometimes they occupy the middle, as in the digastricus. They are generally placed at the most moveable end, the opposite extremity of the muscle having its fibres implanted in aponeuroses, as we see particularly in the forearm and leg, where all the muscles, attached above by broad bony or aponeurotic surfaces, terminate below by comparatively slender tendons. From this arrangement, the ends of the limbs, which execute the most extensive motions, are less bulky, and consequently less heavy; and the whole effort of a large muscle is concentrated upon a narrow point of bone. The resisting powers which characterise the fibrous tissue in so remarkable a manner, render the tendons particularly fit for those situations, where they have to turn over, and consequently rub against, the ends of the bones; and the same property enables them to withstand the external efforts and violence to which these parts of the limbs are necessarily much exposed in executing their various functions.

The form of the tendons is generally round; that figure includes the greatest bulk under the smallest surface. But sometimes they are more or less flattened. They may be divided into two or more secondary portions, implanted into separate bones, or receiving muscular fibres. A loose cellular substance connects them to each other, or to surrounding organs, and allows them a free power of motion. Sometimes, instead of this tissue, they are surrounded by synovial membranes, or partially covered by such membranes, which are expanded also on the surfaces of the parts over which the tendon moves. These arrangements are found in situations where the motion is very extensive, or the friction between a tendon and a bone very considerable; they have been commonly called *bursæ mucosæ*; the details concerning their structure will be found under the articles *MEMBRANE* (division of synovial membranes), and *FIBROUS SYSTEM* (division of fibrous sheaths.)

The mode of connection of the muscular fibres to the tendons varies. The tendon sometimes has a row of fibres joining it at acute angles on each side, so that it may be compared to the shaft, and the fibres to the barbs of a feather; such have been called *penniform muscles*. When the fibres run into the tendon on one side only, it is called a *semipenniform muscle*. Sometimes the tendon is contained in the substance of the muscle, and can be exposed only by making a longitudinal section.

The connection of the muscular fibres to the tendons and to the aponeuroses is the same. If we follow carefully a particular bundle of fibres, we see it continued in the aponeurosis (for example in the diaphragm) under an alteration of bulk and characters. The muscular and fibrous parts are inseparably connected, and compose one organ. As the power, produced by the contraction of the muscle, is applied through the tendon to the bone, this firm connection is obviously essential to the functions of the part. Yet in no instance are we at any loss in marking the boundary between the fleshy and the fibrous structure; the differences in their organisation and sensible characters are as striking as between their vital properties and functions. In the muscles of a robust and recently killed individual, an appearance of a rising line has been described at the conjunction of the muscular fibre and tendon, and the boundary between the two is sudden and clearly marked. Generally the fibres of the tendon are dispersed in the muscle in a penicillous form.

We deem the opinion, which regards tendons as formed by indurated muscular fibres, no more worthy of discussion

than the conceit of the latter being a continuation of the nerves.

Ebullition causes the tendon and fleshy fibres to separate gradually, and long maceration detaches them. The union is not so intimate in the young subject; scraping with a scalpel detaches the muscular fibres from the tendon at this age, and leaves the surface of the latter nearly smooth.

The opposite end of the tendon is fixed to the periosteum. In the young subject this membrane is easily detached, and carries with it all the tendinous insertions. At more advanced periods, the tendon, periosteum, and bone are identified, and nothing but the hardest scraping will detach the former from the latter. The tendons are implanted in other fibrous membranes, as the *sclerotica* and *corpus cavernosum penis*; but in no other description of organs.

The fibrous tissue is extremely dense in the tendons; several of them appear homogeneous on the first view; but attentive examination soon enables us to discover fibres united by a very compact cellular tissue in very sparing quantity. Ebullition renders these fibres very perceptible: when a tendon has been cut transversely, and plunged into boiling water, they swell at the divided end, and are thus rendered very apparent. When they expand to form an aponeurosis, or to be fixed to the periosteum, they are visible without any preparation. Continued maceration expands and softens these organs, and renders their fibres very distinct. They are parallel to each other, and seem straight: they may be separated into smaller and smaller bundles joined by cellular substance, and the end of this division is doubtful. They have been described as appearing wrinkled, or spiral under microscopic examination.

The vascular system of the tendons admits no red blood; but they become red under certain circumstances of inflammation.

Their vital properties are more obscure, and their mode of vitality in general is more feebly marked than in any other part of the fibrous tissue. No fluid escapes, no pain is felt when they are dissected in living animals; and their temperature (except inasmuch as it is influenced by that of surrounding parts) is low.

*Division, Names, Arrangement, &c. of the Muscles.*—When we speak of a muscle, we do not restrict the term to the proper muscular or fleshy tissue, but mean a particular mass of that tissue together with the tendons or aponeuroses connected to the muscular fibres. In this way we talk of the tendon or aponeurosis of a muscle. Hitherto no certain and regular method has been followed in establishing the separations and distinctions of the animal muscular system. Our general notion of a muscle is that of a mass of muscular fibres, which, with its tendons, is unconnected in every direction with the surrounding ones; the pronator quadratus, and the muscles of the eyeball are examples. Or there may be two or more distinct portions of muscle joined to a common tendon, as in the *pectoralis major* and *biceps flexor cubiti*; or a common mass of muscle may have separate tendons, as the flexors and extensors of the toes and fingers. But, in some cases, anatomists have separated and described as distinct muscles those inserted into a common tendon, as the muscles of the calf, and the extensors of the knee; and they have even done this where the two parts are most closely connected, as in the *sterno-mastoideus* and *eleido-mastoideus*, the *sacro-lumbalis* and *longissimus dorsi*, &c. They have also proceeded in a very arbitrary manner in dividing the muscles of the face, which are very closely connected together. Hence there are numerous exceptions to any general rule concerning the distinctions of the particular muscles.



## MUSCLE.

As a voluntary muscle is an organ composed of fleshy and tendinous fibres, having the office of moving the parts of the body on each other, in which the motion produced by the contraction of the muscular fibres is brought to bear on the parts moved by means of the tendons, it must be fixed to at least two moveable parts. The ends, which are generally tendinous, are comparatively slender, while the middle, composed of fleshy fibres, swells out into a much larger bulk. The extremity fixed to the least moveable part, or that which is nearest to the trunk of the body, is usually called the *origin* (caput or origo) of the muscle; the opposite end, its *insertion* (cauda, finis, initio); and the middle, its *belly* (venter). Where a muscle is connected to two equally moveable points, either end may be called the origin or insertion. The effect produced on any part by the contraction of the muscle is called its *action*.

Anatomists have drawn the names by which they distinguish the particular muscles, from various sources; 1, from the action, as extensor, flexor, pronator, supinator, abductor, adductor, &c.; 2, from the attachments of its extremities, as coraco-brachialis, stylo-hyoideus, genio-glossus, &c.; 3, from the attachment of one end only, as pterygoideus, palmaris; 4, from some remarkable circumstance, as septum transversum; 5, from the direction of its course, as circumflexus, rectus, obliquus; 6, from the figure, as deltoideus, triangularis, rhomboideus; 7, from the number of origins, as biceps, triceps; 8, from the relative position, as radialis, ulnaris, &c.; 9, from size, as vastus, &c. &c. The best names are those drawn from the second of these sources, as they indicate the attachments, and therefore are, in some measure, descriptive; the principle cannot be very well followed, when the connections are numerous, as the names become then immoderately long, and burthen the memory, as much as they offend the ear. Occipiti-dorso-clavi-fus-acromien, the name given by Dumas to the trapezius, is a specimen of these.

The muscles in general are double, and correspond exactly on the two sides of the body; a few are single, placed on the middle line of the body, and divisible into right and left corresponding halves; viz. azygus uvulæ, arytenoideus transversus, sphincter oris, sphincter ani, sphincter vaginæ. The law of symmetry, therefore, which belongs to the parts concerned in the animal life, is applicable to these organs. The diaphragm partakes of the organic as well as animal life; and its structure is not symmetrical; the two halves do not correspond.

The male and female have each a small number of muscles connected with the organs of generation, peculiar to itself; all others are common to both sexes.

The muscles are very numerous; taken altogether, they compose a larger volume, and occupy a larger space than any other system in the body. Besides their other situations, they form a layer generally expanded under the skin, and partaking in some degree the functions of that organ; that is, they protect the subjacent parts, receive with impunity the action of external bodies, and may even be divided to a considerable extent without the general functions of life being sensibly impaired. Hence they are well calculated to defend the more deeply-seated organs, the injuries of which would, in many instances, be fatal. They may be divided, so far as regards their general form, into long, broad, and short.

The long muscles in general occupy the limbs, to the form of which their figure is accommodated. They are separated from the skin by the aponeuroses, from the bones by the periosteum, and thus are lodged in a kind of fibrous tube, which confines them strongly. In this they are disposed

in more or less numerous strata, of which the deeply-seated are bound down by the superficial, which in their turn are supported and confined by the aponeuroses. The latter are always the longest, and belong to the motions of three or four bones, as the flexors of the knee, the flexors and extensors of the wrist, fingers, ankle, toes, &c. In proportion as they are deeper, they are shorter, and concerned almost always in the motions of one joint only.

The different layers are separated by cellular strata, which are loose or close in their texture, according as the motions are free or limited, and thick where vessels or nerves run between the muscles.

The long muscles have been distinguished into simple and compound. The former consist of a single mass of muscular and tendinous fibres; in the latter, there may be either two or more separate portions, arising distinctly, and joined into one mass, as in the serratus anticus, biceps cubiti, &c.; or a single muscle may be split into several insertions, as in the flexors and extensors of the fingers, &c.

They are generally insulated, but sometimes connected together by aponeuroses, which may join two, three, or more of the neighbouring muscles into one mass at their origins; this is the case with those that come from the condyles of the humerus.

The long muscles upon the spine do not resemble those of the limbs; the fibres do not run from one end to the other, but are arranged in numerous short fasciculi, placed in apposition to each other, and therefore forming one muscle.

The broad muscles in general cover the large cavities of the body, particularly the thorax and abdomen; they contribute to form the sides of these cavities, protect the internal organs, and facilitate their functions by the motions which they execute. The thickness of these muscles is inconsiderable; they compose broad strata, sometimes arranged in successive layers, as in the abdomen, sometimes placed over the long muscles, as in the back; in the former case they are more extensive in proportion as they are more superficial.

When a broad muscle arises and terminates on one of the great cavities, it is equally broad throughout, as there are extensive surfaces for all the attachments. But if it proceeds from the trunk to a long bone, its fibres converge; it becomes thicker and narrower, and ends in a comparatively small tendon fixed to the bone. The latissimus dorsi, pectoralis major, &c. exemplify this arrangement.

Cellular strata separate the broad muscles from each other, in the same way as the long; but they are very seldom covered by aponeuroses. They are simply subjacent to the integuments, and their form prevents those displacements, to which the long muscles would be subject, were they not confined by fasciæ. See FASCIA.

The short muscles, in which the three dimensions are nearly equal, are found in situations where the motions are not extensive, but require considerable force. The muscles of the jaw, those in the hand and foot, several about the hip and shoulder, and others in the spine, exemplify this arrangement. The number of their fibres gives the strength, while their shortness corresponds to the limited nature of the movement. These short muscles are often joined together, either at their origin or insertion; they are seldom covered by aponeuroses, and they vary in figure.

This division of the muscles into long, broad, and short, like the corresponding one of the bones, is subject to numerous modifications. Many have a mixed character, and might be classed with equal propriety in either of two divisions. Nature varies the conformation of the moving powers according to the functions of the organs, so that our anatomical



# MUSCLE.

anatomical divisions, instead of being rigorous and precise, are to be regarded merely as approximations.

In describing the muscles, anatomists generally divide the body into certain regions, and consider together the muscles which are connected in point of situation. As this is an arbitrary method, the number of regions is different in different works. The arrangements of Albinus, Innes, and Dumas, as well as the synonyms of all writers previous to the first of these anatomists, and the new names proposed by the last, are contained in the first part of Dr. Barclay's book on the muscular motions of the human body. The particular muscles are described in this dictionary under their respective titles, with a few exceptions. Those of the eye, ear, and nose, are given under those articles: those of the lips, cheeks, tongue, os hyoides, palate, pharynx, and jaw, under **DEGLUTITION**. The muscles belonging to the organs of generation, are described in the article **GENERATION**; and those connected with the anus, in **INTESTINE**.

The synonyms most frequently met with are mentioned in the account of each muscle.

In order to present a general view of the muscles, we shall adopt the arrangement of Dr. Barclay, from whose work the following table is copied. It contains all the muscles connected with the skeleton by origin or insertion. In the middle column the bones are arranged in the usual order of demonstration; the series commencing with the bones of the cranium, and proceeding regularly through those of the face, neck, and trunk, to the extremities. Each bone is followed by the muscles attached to it, the names of which are either in Roman or Italic characters; the former express the muscles which are connected to the bones by insertion, the latter those by origin. When any muscle has other origins, they are to be found in the first column in Italic characters; when other insertions, in the third column, in Roman characters.

## OS FRONTIS.

<i>Occipitis; temporale</i>	-	-	-	<i>Epieranius</i>	-	-	-	-	{	Cutis. Orbic. palpebrarum. Corrug. supercili. Levator labii sup. et alæ nasi.
				<i>Orbicularis palpebrarum</i>	-	-	-	-	-	Cutis. Epicranius. Corrug. supercili.
				<i>Corrugatores superciliarum</i>	-	-	-	-	-	Epicranius.
<i>Sphenoidale. Temporalia. Malaria</i>	-	-	-	<i>Temporales</i>	-	-	-	-	-	Maxilla inferior.

## OSSA PARIETALIA.

<i>Frontale. Sphenoidale. Temporalia.</i>	{	<i>Temporales</i>	-	-	-	-	-	-	-	Maxilla inferior.
<i>Malaria</i>										

## OSSA TEMPORALIA.

<i>Sternum. Clavicula</i>	-	-	-	<i>Sterno-mastoidei.</i>						
<i>Processus transversi cervicis</i>	-	-	-	<i>Trachelo-mastoidei.</i>						
<i>Processus spinales cervicis</i>	-	-	-	<i>Splenii capitis.</i>						
<i>Occipitale. Frontale</i>	-	-	-	<i>Epicranius</i>	-	-	-	-	{	Cutis Orbic. palp. Corrug. superc. Lev. labii sup. et alæ nasi.
<i>Frontale. Sphenoidalia. Parietalia.</i>	{	<i>Temporales</i>	-	-	-	-	-	-	-	Maxilla inferior.
<i>Malaria</i>	-	-	-	<i>Masseteres</i>	-	-	-	-	-	Maxilla inferior.
<i>Malaria</i>	-	-	-	<i>Digastrici</i>	-	-	-	-	-	Maxilla inferior. Os hyoides.
				<i>Stylohyoidei</i>	-	-	-	-	-	Os hyoides.
				<i>Styloglossi</i>	-	-	-	-	-	Lingua.
				<i>Stylopharyngei</i>	-	-	-	-	-	Pharynx.
				<i>Levatores palati molles</i>	-	-	-	-	-	Velum palati.
				<i>Laxatores tympanorum</i>	-	-	-	-	-	Mallei.
				<i>Tensores tympanorum</i>	-	-	-	-	-	Mallei.
				<i>Stapedei</i>	-	-	-	-	-	Stapedes.
				<i>Anteriores auricularum</i>	-	-	-	-	-	Auriculæ.
				<i>Retrahentes auricularum</i>	-	-	-	-	-	Auriculæ.

## MALLEI.

<i>Temporalia</i>	-	-	-	-	<i>Laxatores tympanorum.</i>
<i>Tubæ Eustachii</i>	-	-	-	-	<i>Tensores tympanorum.</i>
<i>Sphenoidale</i>	-	-	-	-	<i>Externi malleorum.</i>

## STAPEDES.

<i>Temporalia</i>	-	-	-	-	<i>Stapedei.</i>
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## OS OCCIPITALE.

<i>Processus spin. dorsi et cervicis</i>	-	-	-	-	<i>Trapezii</i>	-	-	-	-	Scapulæ. Claviculæ.
<i>Proc. spin. cervicis</i>	-	-	-	-	<i>Splenii capitis</i>	-	-	-	-	Ossa temporalia.
<i>Proc. transversi cervicis et dorsi</i>	-	-	-	-	<i>Complexi.</i>					
<i>Proc. spin. atlantis</i>	-	-	-	-	<i>Recti capitis postici minores.</i>					



# MUSCLE.

<i>Proc. spin. vertebra dentata</i>	-	-	-	Recti cap. post. majores.	
<i>Proc. transf. cervicis</i>	-	-	-	Recti cap. interni majores.	
<i>Atlas</i>	-	-	-	Recti cap. int. minores.	
<i>Proc. transv. atlantis</i>	-	-	-	Recti cap. laterales.	
<i>Proc. spin. atlantis</i>	-	-	-	Obliqui cap. superiores.	
<i>Frontale temporalia</i>	-	-	-	<i>Epicranius</i>	Cutis. Orbic. palp. Corrug. supercil.
<i>Lingua. Maxilla infer. et super.</i>					
<i>Ossa sphenoid. Ossa temporalia</i>	-	-	-	Constrictores pharyngis superiores	Pharynx.
<i>Os hyoides</i>	-	-	-	Constrict. pharyng. medii	Pharynx.

## OS SPHENOIDALE.

<i>Ossa temp. pariet. malar. frontale</i>	-	-	-	<i>Temporales</i>	Maxilla inferior.
<i>Maxilla superior</i>	-	-	-	<i>Pterygoidei externi</i>	Maxilla inf.
<i>Ossa palatina</i>	-	-	-	<i>Pterygoidei interni</i>	Max. inf.
				<i>Pterygo-pharyngei.</i>	Pharynx.
				<i>Circumflexi palati</i>	Velum palati. Mala.
				<i>Externi malleorum</i>	Mallei.
				<i>Levatores palpeb. super.</i>	Palpebræ super.
				<i>Obliqui superiores oculorum</i>	Oculi.
				<i>Recti super. ocul.</i>	Oculi.
				<i>Recti externi ocul.</i>	Oculi.
				<i>Recti infer. ocul.</i>	Oculi.
				<i>Recti interni ocul.</i>	Oculi.

## OSSA MALARIA.

<i>Frontale. Parietalia. Sphenoidalia</i>	-	-	-	<i>Temporales.</i>	
<i>Temporalia</i>	-	-	-	<i>Masseteres.</i>	
				<i>Zygomatici majores</i>	Orbicularis oris.
				<i>Zygomat. minores</i>	Orbicularis oris.

## MAXILLA SUPERIOR.

				<i>Compressores narium</i>	Cutis.
				<i>Levat. lab. super. alarumque uasi</i>	Alæ nasi. Orbicularis oris.
				<i>Levat. angulorum oris</i>	Orbic. oris.
				<i>Depressores alarum nasi</i>	Alæ nasi. Labium superius.
<i>Maxilla superior</i>	-	-	-	<i>Buccinatores</i>	Orbicularis oris.
				<i>Mylopharyngei</i>	Pharynx.
<i>Sphenoidale</i>	-	-	-	<i>Pterygoidei externi</i>	Maxilla inferior.
				<i>Obliqui inferiores oculorum</i>	Oculi.

## OSSA PALATINA.

<i>Sphenoidale</i>	-	-	-	<i>Pterygoidei interni</i>	Maxilla inferior.
				<i>Azygus uvulae</i>	Uvula.

## MAXILLA INFERIOR.

<i>Parietalia. Temporalia. Malaria.</i>					
<i>Frontale. Sphenoidale</i>	-	-	-	<i>Temporales.</i>	
<i>Temporalia. Malaria</i>	-	-	-	<i>Masseteres.</i>	
<i>Sphenoidale. Maxilla superior</i>	-	-	-	<i>Pterygoidei externi.</i>	
<i>Sphenoidale. Palatina</i>	-	-	-	<i>Pterygoidei interni.</i>	
<i>Tela cellulosa humeri et pectoris</i>	-	-	-	<i>Latissimi colli</i>	{ Depressores angulorum oris. Depress. lab. infer. Tela cellulosa faciei.
<i>Temporalia</i>	-	-	-	<i>Digastrici.</i>	
				<i>Mylo-hyoidei</i>	Os hyoides.
				<i>Genio-hyoidei</i>	Os hyoides.
				<i>Genio-glossi</i>	Lingua. Os hyoides.
<i>Maxilla superior</i>	-	-	-	<i>Buccinatores</i>	Orbicularis oris.
				<i>Depressores angul. oris</i>	Orbic. oris.
				<i>Depress. lab. infer.</i>	Orbic. oris.
				<i>Levatores menti</i>	Cutis et adeps labii infer.
				<i>Mylo-pharyngei</i>	Pharynx.

## OS HYOIDES.

<i>Ossa temporalia</i>	-	-	-	<i>Digastrici</i>	Maxilla inferior.
<i>Maxilla inferior</i>	-	-	-	<i>Mylo-hyoidei.</i>	



# MUSCLE.

<i>Offa temporalia</i>	-	-	-	-	Stylo-hyoidei.					
<i>Maxilla inferior</i>	-	-	-	-	Genio-hyoidei.					
<i>Cartilago thyroidea</i>	-	-	-	-	Thyro-hyoidei.					
<i>Sternum. Costæ primæ. Claviculæ</i>	-	-	-	-	Sterno-hyoidei.					
<i>Scapulæ</i>	-	-	-	-	Omo-hyoidei.					
					<i>Hyo-pharyngei</i>	-	-	-	-	Pharynx. Os occipitale.
					<i>Hyo-glossi</i>	-	-	-	-	Lingua.
<i>Maxilla inferior</i>	-	-	-	-	Genio glossi	-	-	-	-	Lingua.

## VERTEBRÆ CERVICIS.

<i>Vertebræ dorfi.</i>	<i>Proc. transv. cervicis</i>	-	-	-	Longi colli.					
					<i>Recti capitis interni minores</i>	-	-	-	-	Os occipitale.

## PROCESSUS SPINALES.

<i>Processus spinales cervicis</i>	-	-	-	-	Interspinales colli.					
<i>Processus transv. cervicis et dorfi</i>	-	-	-	-	Multifidi spinæ.					
<i>Proc. transv. cerv. et dorfi</i>	-	-	-	-	Semispinales colli.					
<i>Proc. transv. dorfi</i>	-	-	-	-	Semispinales dorfi	-	-	-	-	Proc. spin. dorfi.
<i>Proc. spin. dorfi. Os occipitale</i>	-	-	-	-	<i>Trapezii</i>	-	-	-	-	Scapulæ. Claviculæ.
					<i>Splenii capitis</i>	-	-	-	-	Occipitalia. Temporalia.
					<i>Recti cap. postici majores</i>	-	-	-	-	Occipitale.
					<i>Recti cap. post. minores</i>	-	-	-	-	Occipitale.
					<i>Obliqui cap. inferiores</i>	-	-	-	-	Proc. transv. atlantis.
<i>Proc. spin. dorfi</i>	-	-	-	-	<i>Serrati postici superiores</i>	-	-	-	-	Costæ.
					<i>Rhomboidei minores</i>	-	-	-	-	Scapulæ.

## PROCESSUS TRANSVERSI.

<i>Proc. transv. cervicis</i>	-	-	-	-	Intertransversi colli.					
<i>Proc. spin. dorfi</i>	-	-	-	-	Splenii colli.					
<i>Proc. transv. dorfi</i>	-	-	-	-	Transversales cervicis.					
<i>Costæ</i>	-	-	-	-	Cervicales descendentes.					
<i>Proc. spin. vertebræ dentatæ</i>	-	-	-	-	Obliqui capitis inferiores.					
<i>Proc. transv. dorfi</i>	-	-	-	-	<i>Semispinales colli</i>	-	-	-	-	Proc. spin. cervicis.
					<i>Multifidi spinæ</i>	-	-	-	-	Proc. spin. cervicis.
<i>Proc. transv. dorfi</i>	-	-	-	-	<i>Complexi</i>	-	-	-	-	Os occipitale.
<i>Proc. transv. dorfi</i>	-	-	-	-	<i>Trachelo-mastloidei</i>	-	-	-	-	Offa temporalia.
					<i>Obliqui capitis superiores</i>	-	-	-	-	Os occipitale.
					<i>Recti cap. int. majores</i>	-	-	-	-	Os occipitale.
					<i>Recti cap. laterales</i>	-	-	-	-	Os occip.
					<i>Scaleni</i>	-	-	-	-	Costæ.
<i>Vertebræ dorfi</i>	-	-	-	-	Longi colli	-	-	-	-	Vertebræ cervicis.
					<i>Levatores scapularum</i>	-	-	-	-	Scapulæ.
					<i>Levatores duo costarum</i>	-	-	-	-	Costæ.

## VERTEBRÆ DORSI.

<i>Iliæ</i>	-	-	-	-	<i>Quadrati lumborum</i>	-	-	-	-	Proc. transv. lumb. Costæ ultimæ.
<i>Vertebræ et proc. transv. lumb.</i>	-	-	-	-	<i>Psoæ magni</i>	-	-	-	-	Femora.

## PROCESSUS SPINALES.

<i>Proc. spin. lumbor.</i>	-	-	-	-	Spinales dorfi.					
<i>Proc. transv. dorfi</i>	-	-	-	-	Semispinales dorfi.					
<i>Proc. transv. dorfi et lumbor.</i>	-	-	-	-	Multifidi spinæ.					
<i>Proc. spin. cervicis. Os occip.</i>	-	-	-	-	<i>Trapezii</i>	-	-	-	-	Scapulæ. Claviculæ.
<i>Proc. spin. sacri et lumbor. ilia. Costæ.</i>	-	-	-	-	<i>Latissimi dorfi</i>	-	-	-	-	Humeri.
<i>Proc. spin. cervicis</i>	-	-	-	-	<i>Serrati postici superiores.</i>					
<i>Proc. spin. lumb.</i>	-	-	-	-	<i>Serrati post. infer.</i>					
					<i>Rhomboidei majores</i>	-	-	-	-	Scapulæ.
					<i>Splenii colli</i>	-	-	-	-	Proc. transv. cervicis.
<i>Proc. transv. dorfi</i>	-	-	-	-	<i>Biventre cervicis</i>	-	-	-	-	Os occipitale.

## PROCESSUS TRANSVERSI.

<i>Iliæ. Proc. spin. et transv. sacri et lumborum</i>	-	-	-	-	Longissimi dorfi	-	-	-	-	Costæ.
					<i>Semispinales dorfi</i>	-	-	-	-	Proc. spin. dorfi et cervicis.

*Multifidi*



# MUSCLE.

		<i>Multifidi spinæ</i>	-	-	-	-	Proc. spin. dorſi et cervicis.
		<i>Semispinales colli</i>	-	-	-	-	Proc. spin. cervicis.
<i>Proc. tranſv. cervicis</i>	-	-	-	-	-	-	Os occipitale.
<i>Proc. ſpin. dorſi et cervicis</i>	-	-	-	-	-	-	Os occip.
<i>Proc. tranſv. cervicis</i>	-	-	-	-	-	-	Oſſa temporalia.
<i>Proc. tranſ. dorſi</i>	-	-	-	-	-	-	Proc. tranſv. cervicis.
		<i>Complexi</i>	-	-	-	-	
		<i>Biventreſ cervicis</i>	-	-	-	-	
		<i>Trachelo-maſtoidei</i>	-	-	-	-	
		<i>Tranſverſales cervicis</i>	-	-	-	-	

## VERTEBRÆ LUMBORUM.

<i>Coſtæ</i>	-	-	-	-	-	-	<i>Diaphragma.</i>
<i>Ultima vert. dorſi ; et proc. tranſ. ejuf.</i>	-	-	-	-	-	-	<i>Pſoæ magni</i>
	-	-	-	-	-	-	<i>Pſoæ parvi</i>
	-	-	-	-	-	-	Femora.
	-	-	-	-	-	-	Pubes.

## PROCESSUS SPINALES.

<i>Sacrum. Proc. tranſ. lumbor.</i>	-	<i>Multifidi ſpinæ.</i>				
<i>Iliæ. Proc. ſpin. ſacri, lumborum, et</i>	}	<i>Latiffimi dorſi</i>	-		-	Humeri.
<i>dorſi. Coſtæ.</i>		<i>Serrati poſtici inferiores</i>	-		-	Coſtæ.
<i>Proc. ſpin. dorſi</i>	-	<i>Sacrolumbales cum acceſſoriis</i>	-		-	Coſtæ.
<i>Iliæ. Coſtæ. Proc. ſpin. ſacri. Proc.</i>	}	<i>Longiſſimi dorſi</i>	-		-	Coſtæ et proc. tranſ. dorſi.
<i>ſpin. et tranſv. lumbor.</i>						
<i>Iliæ. Proc. ſpin. ſacri. Proc. ſpin. et</i>	}					
<i>tranſ. lumborum</i>						
<i>Proc. ſpin. ſacri. Tranſ. lumb.</i>	-	<i>Obliqui externi abdominis</i>	-		-	Coſtæ. Linea alba.
<i>Iliæ. Lig. Pouparti</i>	-					

## PROCESSUS TRANSVERSI.

<i>Iliæ</i>	-	-	-	<i>Quadrati lumborum</i>	-	-	Coſtæ ult. verteb. ult. dorſi.
<i>Iliæ. Proc. ſpin. ſacri et lumb.</i>	-	-	-	<i>Longiſſimi dorſi</i>	-	-	Coſtæ et proc. tranſ. dorſi.
<i>Iliæ. Coſtæ. Proc. ſpin. ſacri et lum-</i>	}	<i>Sacrolumbales cum acceſſoriis</i>	-		-	-	Coſtæ.
<i>borum</i>							
<i>Sacrum</i>	-	-	-	<i>Multifidi ſpinæ</i>	-	-	Proc. ſpin. lumb. et dorſi.
<i>Iliæ. Sacrum. Proc. ſpin. lumbor.</i>	-						
<i>Ligam. Pouparti</i>	-	-	-	<i>Obliqui interni abdominis</i>	-	-	Linea alba. Coſtæ.
<i>Iliæ. Lig. Pouparti</i>	-	-	-	<i>Tranſverſi abdominis</i>	-	-	Linea alba. Coſtæ.

## SACRUM.

## PROCESSUS SPINALES.

<i>Iliæ. Coſtæ. Proc. ſpin. lumb. et dorſi</i>	-	<i>Latiffimi dorſi</i>	-		-	Humeri.
<i>Iliæ. Proc. ſpin. et tranſ. lumb.</i>	-	<i>Obliqui interni abdominis</i>	-		-	Coſtæ. Linea alba.
<i>Lig. Pouparti</i>	-	<i>Longiſſimi dorſi</i>	-		-	Proc. tranſ. dorſi et coſtæ.
<i>Iliæ. Proc. ſpin. et tranſ. lumb.</i>	-	<i>Sacrolumbales cum acceſſoriis</i>	-		-	Coſtæ.
<i>Iliæ. Coſtæ. Proc. ſpin. et tranſ. lumb.</i>	}					
<i>Iliæ. Coccyx. Proc. tranſ. ſacri</i>	-	<i>Glutei magni</i>	-		-	Femora. Falcia femorum
<i>Iliæ. Proc. tranſ. ſacri</i>	-	<i>Multifidi ſpinæ</i>	-		-	Proc. ſpin. lumb.

## PROCESSUS TRANSVERSI.

<i>Iliæ. Proc. ſpin. ſacri. Coccyx.</i>	-	<i>Glutei magni</i>	-		-	Femora. Falcia femorum.
<i>Ligamenta ſacro-ſciatica</i>	-	<i>Multifidi ſpinæ</i>	-		-	Proc. ſpin. lumb.
<i>Iliæ. Proc. ſpin. ſacri</i>	-	<i>Coccygei</i>	-		-	Coccyx.
		<i>Curvatores coccygis</i>	-		-	Coccyx.
<i>Iliæ</i>	-	<i>Pyriſiformes</i>	-		-	Femora.

## COCCYX.

<i>Iſchia</i>	-	-	-	<i>Coccygei.</i>		
<i>Sacrum</i>	-	-	-	<i>Curvatores coccygis.</i>		
<i>Oſſa inneminata</i>	-	-	-	<i>Levatores ani.</i>		
				<i>Sphincter ani</i>	-	Accelerator urinæ.
<i>Iliæ. Sacrum. Ligamenta. ſacro-ſciatica</i>	-	-	-	<i>Glutei magni</i>	-	Femora. Falcia femorum.

## COSTÆ.

<i>Coſtæ</i>	-	-	-	<i>Intercostales.</i>		
<i>Proc. tranſ. dorſi</i>	-	-	-	<i>Levatores longiores coſtarum.</i>		



# MUSCLE.

<i>Proc. transf. colli et dorfi</i>	-	Levat breviores costar.		
<i>Sternum. Cartilago ensiformis</i>	-	Triangulares sterni.		
<i>Proc. spin. dorfi et cervicis</i>	-	Serrati postici superiores.		
<i>Proc. spin. dorfi et lumborum</i>	-	Serrati post. inferiores.		
<i>Ilia. Sacrum. Proc. spin. et transf. lumb.</i>	-	Sacrolumbales.		
<i>Ilia. Sacrum. Proc. spin. et transf. lumb.</i>	-	Longissimi dorfi	-	Proc. transf. dorfi.
<i>Ilia</i>	-	Quadrati lumborum	-	Proc. transf. lumb. Vertebra ultima dorfi.
	-	Obliqui externi abdominis	-	Ossa innominata. Linea alba.
<i>Ilia. Sacrum. Obliqui externi. Proc. spin. et transf. lumborum</i>	-	Obliqui interni abdominis	-	Linea alba. Pubes.
<i>Proc. transf. cervicis</i>	-	Scaleni.		
<i>Ilia. Obliqui externi. Proc. transf. lumb.</i>	-	Transversi abdominis	-	Linea alba. Pubes.
<i>Clavicula</i>	-	Subclavii.		
<i>Sternum. Clavicula</i>	-	Pectorales majores	-	Humeri.
	-	Pectorales minores	-	Scapulæ.
	-	Serrati magni	-	Scapulæ.
<i>Ilia. Sacrum. Proc. spin. lumb. et dorfi</i>	-	Latissimi dorfi	-	Humeri.
	-	Accessorii ad sacrolumbales	-	Sacrolumbales.
<i>Vertebra lumborum. Cartilago ensiformis</i>	-	Diaphragma.		

## STERNUM ET CARTILAGO ENSIFORMIS.

<i>Clavicula</i>	-	Sterno cleido-mastoidei	-	Ossa temporalia. Os occipitale.
<i>Costæ primæ. Clavicula</i>	-	Sterno-hyoidei	-	Os hyoides.
<i>Costæ primæ</i>	-	Sterno-thyroidei	-	Cartilago thyroidea.
<i>Costæ. Clavicula</i>	-	Pectorales majores	-	Humeri.
<i>Costæ</i>	-	Obliqui externi abdominis	-	Ossa innominata. Linea alba.
<i>Ossa innominata. Obliqui externi. Sacrum. Proc. spin. et transf. lumborum</i>	-	Obliqui interni abdominis	-	Pubes. Linea alba. Costæ.
<i>Obliqui externi. Ossa innominata. Proc. transf. lumborum</i>	-	Transversi abdominis	-	Linea alba. Pubes.
<i>Costæ</i>	-	Recti abdominis	-	Pubes.
	-	Triangularis sterni	-	Costæ.
<i>Costæ. Vertebra lumborum</i>	-	Diaphragma.		

## CLAVICULÆ.

<i>Os occip.</i>	<i>Proc. spin. cervicis et dorfi</i>	Subclavii	-	Costæ primæ.
<i>Sternum</i>	-	Trapezii	-	Scapulæ.
<i>Sternum. Costæ primæ</i>	-	Sterno cleido-mastoidei	-	Os occip. Temporalia.
	-	Sterno-hyoidei	-	Os hyoides.
	-	Pectorales majores	-	Humeri.
<i>Scapula</i>	-	Deltoides	-	Humeri.

## SCAPULÆ.

<i>Os occip.</i>	<i>Proc. spin. cervicis et dorfi</i>	Trapezii	-	Claviculæ.
<i>Proc. spin. cerv. et dorfi</i>	-	Rhomboidei.		
<i>Proc. transf. cervicis</i>	-	Levatores scapularum.		
<i>Costæ</i>	-	Serrati magni.		
<i>Costæ</i>	-	Pectorales minores.		
	-	Omo-hyoidei	-	Os hyoides.
	-	Supraspinati	-	Humeri. Capsæ articulares.
	-	Infraspinati	-	Humeri. Capsæ artic.
	-	Teretes majores	-	Humeri.
	-	Teretes minores	-	Humeri. Capsæ artic.
	-	Subscapulares	-	Humeri. Capsæ artic.
	-	Deltoides	-	Humeri.
	-	Coraco-brachiales	-	Humeri.
<i>Humeri</i>	-	Tricipites brachiorum	-	Ulnæ.
	-	Bicipites brachiorum	-	Rad. Aponeuroses cubitorum.

HUMERI



# MUSCLE.

## HUMERI.

<i>Clavicula. Scapula</i>	-	-	Deltoidi.		
<i>Scapula</i>	-	-	Supraspinati.		
	-	-	Infra-spinati.		
	-	-	Teretes majores.		
	-	-	Teretes minores.		
	-	-	Subscapulares.		
	-	-	Coraco-brachiales.		
<i>Clavicula. Costa. Sternum</i>		-	Pectorales majores.		
<i>Scapula</i>	-	-	Tricipites brachiorum	-	Ulnæ.
<i>Proc. spin. sacri, lumb. et dorsi. Iliæ.</i>	}	}	Latissimi dorsi.		
<i>Costa</i>			Anconeï	-	Ulnæ.
			Brachiales interni	-	Ulnæ.
			Supinatores longi	-	Radii.
			Extensores carpi radiales longiores	-	Ossa metacarp. indicum.
<i>Aponeuroses antibrachiorum. Capsa articularum</i>	}	}	Extens. carpi rad. breviores	-	Metacarp. dig. medior.
			Extens. commun. digitor.	-	Phalanges digitorum.
			Extens. propr. auricular.	-	Phalanges digit. auricul.
			Extens. carpi ulnares	-	Metacarp. dig. auric.
<i>Ulnæ. Capsa articul.</i>	-	-	Supinatores breves	-	Radii.
			Palmares longi.		
<i>Aponeuroses antibr. Capsa artic.</i>	-	}	Flexores carpi radiales.		
			Flexores carpi ulnares.		
			Pronatores teretes.		
<i>Radii</i>	-	-	Flexor. digit. sublimis	-	Phalanges mediæ digit.

## ULNÆ.

<i>Scapula. Humeri</i>	-	-	Tricipites	-	Capsa artic. cubitor.
<i>Humeri</i>	-	-	Brachiales interni	-	Capsa artic. cubitor.
			Extens. commun. digit.	-	Phalang. digit.
<i>Aponeuroses antibr. Capsa artic. cubitor.</i>	}	}	Extens. propr. auric.	-	Phalang. dig. auric.
			Extens. carpi ulnares	-	Metacarp. dig. auric.
			Extens. carpi rad. breviores	-	Metacarp. dig. medior.
			Indicadores	-	Phalanges indicum.
			Palmares longi.	-	Aponeuroses palmares. Ligamenta annularia.
<i>Aponeuroses antibr. Capsa artic. cubitor.</i>	}	}	Flexores carp. radiales	-	Metacarpi indicum. Ossa trapezia.
			Flexores carp. ulnares	-	Ossa pisiformia. Ligamenta annularia.
			Pronatores teretes	-	Radii.
<i>Radii. Aponeuroses</i>	-	-	Flexores digit. sublimis	-	Phalanges digit. mediæ.
<i>Ligamenta interossea antibrach.</i>	-	-	Flex. digit. profundus	-	Phalanges digit. tertiar.
<i>Radii. Ligamenta interossea</i>	-	-	Extensores primi internodii pollicum	-	Phal. prim. poll. abduct. poll.
<i>Radii. Ligamenta inteross.</i>	-	-	Extens. secund. internod. poll.	-	Phal. secund. poll.
<i>Ligamenta inteross.</i>	-	-	Extens. tert. internod. poll.	-	Phal. tert. poll.

## RADII.

<i>Scapula</i>	-	-	Bicipites	-	Aponeuroses cubitorum.
<i>Humeri</i>	-	-	Supinatores longi.		
<i>Humeri. Ulnæ. Capsa articular.</i>		-	Supinatores breves.		
<i>Humeri. Aponeur. antibr.</i>		-	Pronatores teretes.		
<i>Ulnæ</i>	-	-	Pronatores quadrati.		
<i>Humeri</i>	-	-	Extens. carpi ulnar.	-	Metacarp. digitor. minimor.
<i>Humeri. Ulnæ. Apon. antibr.</i>		-	Extensores commun. digitor.	-	Phalanges digitorum.
			Flexor. longi pollicum	-	Phalang. tert. poll.
<i>Humeri. Ulnæ</i>	-	-	Flexores sublimis digitor.	-	Phalang. med. digitorum.

## PISIFORMIA.

<i>Humeri. Ulnæ</i>	-	-	Flexores carp. ulnares.		
<i>Ligamenta annularia</i>	-	-	Abductores digit. minimi.	-	Phal. prim. dig. min.

## TRAPEZIA.

<i>Ossa magna et unciformia</i>	-	-	Opponentes pollicum	-	Phalang. primæ poll.
<i>Ligamenta annularia</i>	-	-	Abductores pollicum	-	Phalanges secund. poll.



# MUSCLE.

<i>Phal. prim. poll.</i>	-	<i>Abductores indicum</i>	-	- { <i>Phal. prim. indicum. Tendines exten-</i> <i>forum.</i>
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## TRAPEZOIDEA.

<i>Offa magna et unciformia. Metacarp. indicum, mediorum, annular.</i>	-	<i>Flexores breves pollicum</i>	-	- { <i>Phal. secund. poll. ope ossium sesamoi-</i> <i>deorum.</i>
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## UNCIFORMIA.

<i>Offa magna et uncif. metacarp.</i>	-	<i>Flexores breves poll.</i>	-	- <i>Phal. secund. poll. ope ossium sesamoid.</i>
<i>Ligamenta annularia</i>	-	<i>Adductores digit. auricul.</i>	-	- <i>Metacarp. digit. auric.</i>
<i>Ligamenta annularia</i>	-	<i>Flexores breves auricul.</i>	-	- <i>Metacarp. digit. auric.</i>

## METACARPI.

<i>Humeri</i>	-	- { <i>Extensores carpi radiales longiores et</i> <i>breviores.</i>		
		<i>Interossei</i>	-	- { <i>Phalanges tertie digit. Tendines ex-</i> <i>tenforum communium.</i>
<i>Trapezia. Trapezoidea. Offa magna. Unciformia</i>	-	<i>Flexores breves pollicum</i>	-	- { <i>Phalanges secund. poll. ope ossium se-</i> <i>famoideorum</i>
		<i>Adductores poll.</i>	-	- <i>Phal. secund. poll. ope ossium sesamoid.</i>
<i>Humeri. Ulnæ</i>	-	<i>Extensores carp. ulnares</i>	-	- <i>Phal. secund. poll. ope ossium sesamoid.</i>
<i>Offa unciformia. Ligamenta annularia</i>	-	<i>Adductores metacarp. digit. minim.</i>	-	

## PHALANGES.

### PRIMÆ POLLICUM.

<i>Lig. annul. Trapezia. Offa magna et unciformia</i>	-	- { <i>Opponentes poll.</i>		
<i>Ulnæ. Radii. Ligament. inteross.</i>	-	<i>Extensores primor. internod.</i>	-	
		<i>Abductores indicum</i>	-	- <i>Phalanges primæ indicum.</i>

### SECUNDÆ POLLICUM.

<i>Ulnæ. Ligamenta interossea</i>	-	<i>Extensf. secund. internod.</i>		
<i>Offa uncif. Trapezoid. Magna. Metacarpi</i>	-	<i>Flexores breves poll.</i>		
<i>Trapezia. Ligamenta annularia</i>	-	<i>Abductores poll.</i>		
<i>Metacarpi digit. med.</i>	-	<i>Adductores poll.</i>		

### TERTIÆ POLLICUM.

<i>Ulnæ. Ligamenta interossea</i>	-	<i>Extensores tert. internod.</i>		
<i>Radii. Lig. interossea</i>	-	<i>Flexores longi poll.</i>		

### PRIMÆ DIGITORUM.

<i>Pisiformia. Ligamenta annularia</i>	-	<i>Abductores digit. minim.</i>		
<i>Metacarpi indicum</i>	-	<i>Semi-interosseus indicis</i>	-	- <i>Tendines extensores communium.</i>
<i>Phalang. prim. pollicum</i>	-	<i>Abductores indicis.</i>		
<i>Unciformia. Lig. annular.</i>	-	<i>Flexores breves auricul.</i>		

### PHALANGES SECUNDÆ.

<i>Humeri. Radii</i>	-	<i>Flexores sublimes.</i>		
<i>Ulnæ</i>	-	<i>Indicadores</i>	-	- <i>Tendines extensf. commun.</i>
<i>Humeri. Ulnæ. Aponeur. antib.</i>	-	<i>Extensores communes.</i>		
<i>Humeri. Ulnæ. Aponeur. antib.</i>	-	<i>Extensores prop. dig. auric.</i>		

### PHALANGES TERTIÆ.

<i>Radii. Ligamenta interossea</i>	-	<i>Flexores profundi.</i>		
<i>Metacarpi</i>	-	<i>Interossei</i>	-	- <i>Tendines extensf. commun.</i>
<i>Tendines profundorum</i>	-	<i>Lumbricales</i>	-	- <i>Tendines extensf. commun.</i>

## ILIA.

<i>Proc. spin. sacri, lumb. et dorfi.</i>	-	<i>Latissimi dorfi</i>	-	- <i>Humeri.</i>
<i>Costæ</i>	-	<i>Longissimi dorfi</i>	-	- <i>Costæ. Proc. transf. dorfi.</i>



# MUSCLE.

<i>Sacrum. Proc. spin. et transf. lumb.</i>	<i>Sacrolumbales</i>	-	-	-	Costæ.
<i>Costæ</i>	<i>Obliqui externi abdominis</i>	-	-	-	Pubes. Linea alba.
<i>Obliqui externi. Sacrum. Proc. spin. et transf. lumb.</i>	<i>Obliqui interni abdominis</i>	-	-	-	Costæ. Linea alba. Pubes.
<i>Obliqui ext. Proc. transf. lumb.</i>	<i>Transversi abdominis</i>	-	-	-	Costæ. Linea alba. Pubes.
<i>Ligamenta ilio-lumbaria</i>	<i>Quadrati lumborum</i>	-	-	-	{ Proc. transf. lumb. Costæ ult. Vertebra ultima dorsi.
<i>Sacrum</i>	<i>Iliaci interni</i>	-	-	-	Femora.
<i>Sacrum. Coccyx. Ligament. sacro-sciatica</i>	<i>Pyriformes</i>	-	-	-	Femora.
	<i>Glutei magni</i>	-	-	-	Femora et fasciæ latæ.
	<i>Glutei medii</i>	-	-	-	Femora.
	<i>Glutei minimi</i>	-	-	-	Femora.
	<i>Tenfores vaginalium</i>	-	-	-	Fasciæ latæ.
	<i>Sartorii</i>	-	-	-	Tibiæ.
	<i>Recti crurum</i>	-	-	-	Patellæ.

## PUBES.

<i>Verteb. ult. dorsi et prima lumb.</i>	<i>Psoæ parvi</i>	-	-	-	
<i>Costæ. Sternum</i>	<i>Recti abdominis</i>	-	-	-	
	<i>Pyramidales</i>	-	-	-	Linea alba.
	<i>Pectinei</i>	-	-	-	Femora.
	<i>Graciles</i>	-	-	-	Tibiæ.
<i>Ischia</i>	<i>Tricipites</i>	-	-	-	Femora.
<i>Ischia. Ligament. obturat.</i>	<i>Obturatores externi</i>	-	-	-	Femora.
<i>Ischia. Ligament. obturat.</i>	<i>Obturatores interni</i>	-	-	-	Femora.
<i>See ILIA</i>	<i>Obliqui externi abdom.</i>	-	-	-	
	<i>Obliqui interni abdom.</i>	-	-	-	
	<i>Transversi abdom.</i>	-	-	-	See ILIA.

## ISCHIA.

	<i>Gemini</i>	-	-	-	Femora.
	<i>Semitendinosi</i>	-	-	-	Tibiæ.
	<i>Semimembranosæ</i>	-	-	-	Tibiæ.
<i>Femora</i>	<i>Bicipites</i>	-	-	-	Fibulæ.
<i>Pubes</i>	<i>Tricipites</i>	-	-	-	Femora.
	<i>Quadrati femorum</i>	-	-	-	Femora.
<i>Pubes. Ligamenta obturat.</i>	<i>Obturatores externi</i>	-	-	-	Femora.
<i>Pubes. Ligamenta obturat.</i>	<i>Obturatores interni</i>	-	-	-	Femora.
	<i>Erectores penis</i>	-	-	-	Corpora cavernosa penis.
	<i>clitoridis</i>	-	-	-	clitoridis.
	<i>Transversi perinei</i>	-	-	-	Acceleratores urinæ. Sphincter ani.
	<i>Transversi alteri perinei</i>	-	-	-	Urethra. Corp. cavern. penis.

## FEMORA.

<i>Ilia. Sacrum. Coccyx</i>	<i>Glutei magni</i>	-	-	-	Fasciæ latæ.
<i>Ilia</i>	<i>medii.</i>	-	-	-	
<i>Ilia</i>	<i>minimi.</i>	-	-	-	
<i>Ilia. Sacrum</i>	<i>Pyriformes.</i>	-	-	-	
<i>Ischia</i>	<i>Gemini.</i>	-	-	-	
<i>Ischia. Pubes. Ligament. obtur.</i>	<i>Obturatores externi.</i>	-	-	-	
<i>Ischia. Pubes. Ligament. obtur.</i>	<i>interni.</i>	-	-	-	
<i>Ischia</i>	<i>Quadrati femorum.</i>	-	-	-	
<i>Ilia</i>	<i>Tenfores vaginalium</i>	-	-	-	Fasciæ latæ.
<i>Pubes</i>	<i>Pectinei.</i>	-	-	-	
<i>Pubes. Ischia</i>	<i>Tricipites.</i>	-	-	-	
<i>Ultima vert. dorsi. Verteb. lumb.</i>	<i>Psoæ magni.</i>	-	-	-	
<i>Ilia</i>	<i>Iliaci interni.</i>	-	-	-	
	<i>Vastæ externi</i>	-	-	-	Patellæ.
	<i>interni</i>	-	-	-	Patellæ.
	<i>Crurei</i>	-	-	-	Patellæ.
	<i>Gastrocnemii</i>	-	-	-	Calcanea.
	<i>Plantares</i>	-	-	-	Calcanea.
	<i>Bicipites crurum</i>	-	-	-	Fibulæ.
	<i>Poplitei</i>	-	-	-	Tibiæ.

## TIBIÆ.



# MUSCLE.

## TIBIÆ.

<i>Iliæ</i>	-	-	-	-	Sartorii.				
<i>Pubes</i>	-	-	-	-	Graciles.				
<i>Ischia</i>	-	-	-	-	Semitendinosi.				
<i>Ischia</i>	-	-	-	-	Semimembranos.				
<i>Iliæ</i>	-	-	-	-	Recti crurum	}			
<i>Femora</i>	-	-	-	-	Crurei				
<i>Femora</i>	-	-	-	-	Vast. externi				
<i>Femora</i>	-	-	-	-	— interni		-	-	Interventu patellarum.
<i>Ligamenta interossea</i>	-	-	-	-	Tibiales antici		-	-	Of. cuneiform. intern. metatarsi.
<i>Fibulæ</i>	-	-	-	-	Extensores longi dig. ped.		-	-	Phalanges digitorum.
<i>Fibulæ</i>	-	-	-	-	Solei		-	-	Calcanea.
<i>Fibulæ. Ligamenta interossea</i>	-	-	-	-	Flexores longi digit. ped.		-	-	Phalanges tertiæ digit.
<i>Fibulæ. Ligamenta interossea</i>	-	-	-	-	Tibiales postici		-	-	Tarsi. Metatarsi.

## FIBULÆ.

<i>Ischia. Femora</i>	-	-	-	-	Bicipites crurum.				
					<i>Peronei longi</i>	-	-	-	Metatarsi poll. Cuneiform. prim.
					— breves	-	-	-	Metatarsi dig. quint.
					— tertii	-	-	-	Metatarsi dig. quint.
					<i>Extensores longi digit. ped.</i>	-	-	-	Phalanges digitorum.
					— proprii poll. ped.	-	-	-	Phalanges pollicum. ped.
					<i>Flexores longi poll. ped.</i>	-	-	-	— ultimæ digitor.
<i>Tibiæ</i>	-	-	-	-	<i>Solei</i>	-	-	-	Calcanea.

## CALCANEÆ.

<i>Femora</i>	-	-	-	-	Gastrocnemii.				
<i>Tibiæ. Fibulæ</i>	-	-	-	-	Solei.				
<i>Femora</i>	-	-	-	-	Plantares.				
					<i>Extensores breves digitor.</i>	-	-	-	Tendines extens. long. Phalanges.
<i>Aponeuroses plantares</i>	-	-	-	-	<i>Flexores breves digitor.</i>	-	-	-	Phalanges mediæ.
					<i>Flexores accessorii</i>	-	-	-	Tendines flexorum longorum.
<i>Cuneiformia tertia</i>	-	-	-	-	<i>Flexores breves pollicum</i>	-	-	-	Phalanges primæ poll. ope off. sesamoid.
<i>Aponeuroses plantares</i>	-	-	-	-	<i>Abductores poll.</i>	-	-	-	Phalanges primæ poll. ope off. sesamoid.
<i>Cuboidea. Cuneiformia tertia.</i>									
<i>Metatarsi. Tendines peron. long.</i>					<i>Adductores poll.</i>	-	-	-	Phalanges primæ poll. ope off. sesamoid.
<i>Metatarsi. Aponeuroses plantar.</i>					<i>Abductores digit. minim.</i>	-	-	-	Phalanges primæ dig. min.

## NAVICULARIA.

<i>Tibiæ. Fibulæ. Ligam. inteross.</i>	-	-	-	-	Tibiales postici	-	-	-	{ Cuneiformia. Calcanea. Metatarsi. digit. quint.
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## CUBOIDEÆ.

<i>Tibiæ. Fibulæ. Ligam. inteross.</i>	-	-	-	-	Tibiales postici	-	-	-	Cuneiformia. Calcanea. Meta. dig. quint.
See CALCANEÆ	-	-	-	-	<i>Adductores poll.</i>	-	-	-	Phal. prim. poll. ope off. sesamoid.
<i>Ligamenta peron. long. Metatarsi</i>					<i>Flexor. brev. digit. minim.</i>	-	-	-	Phal. prim. dig. min.
<i>dig. min.</i>	-	-	-	-					

## CUNEIFORMIA PRIMA.

<i>Tibiæ. Ligament. interossea</i>	-	-	-	-	Tibiales antici	-	-	-	Metatarsi poll.
<i>Tibiæ. Fibulæ. Aponeuroses crurum</i>	-	-	-	-	Peronei longi	-	-	-	Metatarsi poll.
<i>Tibiæ. Fibulæ. Ligamenta interossea</i>	-	-	-	-	Tibiales postici	-	-	-	{ Navicularia. Cuneif. secund. et tert.
									{ Cuboidea. Metatarsi dig. tert.

## CUNEIFORMIA SECUNDA.

<i>Tibiæ. Fibulæ. Ligamenta interossea</i>	-	-	-	-	Tibiales postici	-	-	-	{ Navicularia. Cuneif. secund. et tert.
									{ Cuboidea. Metatarsi dig.

## CUNEIFORMIA TERTIA.

<i>Tendines tibial. post. Aponeuroses plant.</i>	-	-	-	-	<i>Flexores breves pollicum</i>	-	-	-	Phal. prim. poll. ope offium sesamoid.
<i>Calcanea. Aponeuroses plantar.</i>	-	-	-	-	<i>Abductores pollicum</i>	-	-	-	Phal. prim. poll. ope offium sesamoid.



# MUSCLE.

## METATARSI.

			<i>Interossei.</i>	-	-	-	Phalanges primæ digitorum.
			Transversales pedum.	-	-	-	
<i>Tibia.</i>	<i>Fibula.</i>	<i>Aponeurof. crurum</i>	Peronei longi	-	-	-	Cuneiformia prima.
<i>Fibula</i>	-	-	Peronei breves.	-	-	-	
<i>Fibula</i>	-	-	Peronei tertii.	-	-	-	
<i>Tibia.</i>	<i>Ligament. interossea</i>	-	Tibiales antici	-	-	-	Cuneiformia prima.
<i>Tibia.</i>	<i>Fibula.</i>	<i>Lig. interossea</i>	Tibiales postici	-	-	-	Navicularia. Cuneiformia. Cuboidea.
<i>Cuboidea.</i>	<i>Cuneif. tert.</i>	<i>Lig. peron. long.</i>	Adductores pollicum	-	-	-	Phal. prim. poll. ope off. sesamoid.
<i>Cuboidea.</i>	<i>Ligamenta peron. long.</i>	-	Flexores breves dig. min.	-	-	-	Phal. prim. digit. minim.
<i>Calcanea.</i>	<i>Aponeuroses plantares</i>	-	Abductores dig. min.	-	-	-	Phal. prim. digit. minim.

## PHALANGES.

### PRIMÆ POLLICUM.

<i>Calcanea.</i>	<i>Cuboidea.</i>	<i>Cuneif. tertia</i>	-	Flexores breves poll.		
<i>Calcanea.</i>	<i>Aponeuroses plantares</i>	-	-	Abductores poll.		
<i>Calcanea.</i>	<i>Cuboidea.</i>	<i>Cuneif. tertia.</i>	}	Adductores poll.		
<i>Metatarfi</i>	-	-				
<i>Calcanea</i>	-	-	-	Extensores breves digitor.	-	Tendines extensor. long. Phal. digit.

### SECUNDÆ POLLICUM.

<i>Fibula</i>	-	-	-	Extensores proprii poll.	
<i>Fibula</i>	-	-	-	Flexores longi poll.	

### PRIMÆ DIGITORUM.

<i>Metatarfi</i>	-	-	-	Interossei	-	Tendines extensor. long.
<i>Tendines extensorum longorum</i>	-	-	-	Lumbricales	-	Tendines extensor. long.
<i>Calcanea.</i>	<i>Aponeuroses plantares</i>	-	-	Abductores dig. minim.		
<i>Cuboidea.</i>	<i>Ligam. peron. long.</i>	-	-	Flexores breves dig min.		

### MEDIÆ DIGITORUM.

<i>Calcanea.</i>	<i>Aponeuroses plantares</i>	-	Flexores breves digit.	
<i>Fibula</i>	-	-	Extensores longi digit.	

### TERTIÆ DIGITORUM.

<i>Tibia.</i>	<i>Fibula.</i>	<i>Lig. interoff.</i>	-	Flexores longi digit.		
<i>Fibula</i>	-	-	-	Extensores longi digit.	-	Phalanges mediæ.
<i>Calcanea</i>	-	-	-	Extensores breves digit.	-	Tendines extensor. long.

*Explanations of the Plates, in which the Anatomy of the Muscles is represented.*—In each of the muscular figures, different strata of muscles are represented in the two sides of the body. Each is followed by a corresponding plate of outlines; in which, besides the principal figure, the smaller parts are drawn on a larger scale, to make the letters of reference more clear.

## ANATOMY. Myology. Plates VIII. and IX.

On the left side, the first stratum of muscles, or those exposed on removing the skin, are seen: on the right, the second layer, or those brought into view when the preceding have been partially removed, are exhibited.

### A. In the Head, Neck, and Trunk.

1. Frontal portion of the epicranium.
2. Union of the right and left portions.
3. Aponeurosis of the epicranium.
- 4, 5. Attollens or superior auris; 4, the tendinous; 5, the fleshy part.
6. Anterior auris.
- 7, 8. Orbicularis palpebrarum; 7, the interior; 8, the exterior portion.
9. Compressor nasi.
10. Levator labii superioris alæque nasi.
11. ————— proprius.

12. Fibres from the orbicularis palp. to the upper lip.
13. Zygomaticus minor.
14. Lower portion of the levator anguli oris.
15. Zygomaticus major.
16. Orbicularis oris.
17. Nasalis labii superioris.
18. Depressor anguli oris.
19. Depressor labii inferioris proprius.
20. Levatores menti.
21. Buccinator.
22. Masseter.
- 23, 24. Platysma myoides; 23, ruforius of Santorini. The lower jaw, clavicle, and sterno-cleido-mastoideus are marked by dotted lines.
25. Biventer maxillæ inferioris.
- 26, 27, 28. Sterno-cleido-mastoideus; 27, the sternal attachment; 28, the clavicular.
29. Trapezium.
30. Sterno-hyoideus; a little of the sterno-thyroideus is seen at its side.
31. Omo-hyoideus.
32. Levator scapulæ.
33. Scalenus medius.
34. Pectoralis major.
- 35—39. Pectoralis minor; 35, the fleshy part.



## MUSCLE.

- 36—38. Attachments to the ribs; 39, to the coracoid process.  
 40—42. First and second bones of the sternum; and ensiform cartilage.  
 43. Serratus magnus.  
 44. Intercostales externi.  
 45. ——— interni.  
 46. Latissimus dorsi.  
 47—51. The left obliquus externus abdominis; 47, the fleshy portion; 48—51, the aponeurosis.  
 48. The obliquus internus seen through the aponeurosis.  
 49. The rectus; 50, the pyramidalis; 51, the tendinous intersections of the rectus.  
 52. Umbilicus.  
 53. The abdominal ring.  
 54, 55. Obliquus internus abdominis of the right side. The external lamina of the aponeurosis (55), by which the rectus was covered, is removed.  
 56, 57. Rectus abdominis of the right side, exposed by the removal of its sheath; 56, the fleshy part; 57, the tendinous intersections.  
 58. Pyramidalis of the right side.  
 59. Cremaster.

### *B. In the Upper Limbs.*

60. The clavicle.  
 61. The coracoid process of the scapula.  
 62, 63. The subclavius; 62, the fleshy, and 63, the tendinous part.  
 64. Deltoides.  
 65. Subscapularis.  
 66. Teres major.  
 \* Supraspinatus.  
 67—71. Biceps brachii; 67, the fleshy belly; 68, the short head; 69, the long head; 70, the aponeurosis cut off; 71, the tendon inserted in the radius.  
 72. Coracobrachialis.  
 73—75. Triceps; the long, middle, and short heads.  
 76, 77. Brachialis internus; 77, insertion of the tendon in the ulna.  
 78. Supinator longus of the left arm. It is removed on the right side.  
 79. Extensor carpi radialis longior.  
 80. ——— brevior.  
 81. Extensor primi internodii pollicis.  
 82. ——— secundi internodii pollicis.  
 83. Pronator teres. It is removed on the right side.  
 84. Supinator brevis.  
 85. Flexor carpi radialis. In the right arm a portion of the tendon only is left.  
 86. Left palmaris longus.  
 87. Left palmar fascia.  
 88. Left palmaris brevis.  
 89, 90. Flexor digitorum sublimis; 89, the fleshy part; 90, the four tendons divided to allow the passage of the tendons of the flexor profundus.  
 91, 92. Flexor profundus; 91, a part of its tendinous origin; 92, its four tendons.  
 93—96. The four lumbricales.  
 97, 98. Flexor longus pollicis; 97, the fleshy; 98, the tendinous part.  
 99. Pronator quadratus.  
 100. Flexor carpi ulnaris.  
 101. Left abductor pollicis.  
 102. Flexor brevis pollicis.  
 103. Right opponens pollicis. The abductor has been removed.

104. Abductor digiti minimi.  
 105. Right flexor brevis digiti minimi.  
 106. Adductor pollicis.  
 107. Left abductor indicis.  
 108. Annular ligament of the wrist.

### *C. In the Lower Extremities.*

109. Gluteus medius.  
 110. Right gluteus minimus.  
 \* Edge of the left gluteus maximus.  
 111. Left tensor vaginæ femoris.  
 112, 113. Left sartorius; 112, the fleshy; 113, the tendinous part.  
 114. Iliacus internus.  
 115. Psoas magnus.  
 116. Pectineus.  
 117. Adductor longus femoris.  
 118, 119. Gracilis; 118, the fleshy portion; 119, the tendon.  
 120. Tendon of the semitendinosus.  
 121, 122. Rectus femoris; 121, the fleshy part; 122, the tendon. It is cut away on the right side.  
 123. Ligament of the patella.  
 124. Vastus externus.  
 125. ——— internus.  
 126. Right cruralis.  
 127. Biceps femoris.  
 128. Inner head of the left gastrocnemius.  
 129. Soleus.  
 130. Left tendo Achillis.  
 131. Tendon of the left plantaris.  
 132, 133. Flexor longus digitorum pedis; 133, the tendon.  
 134. Tendon of the tibialis posticus.  
 135, 136. Peroneus longus; 136, its tendon.  
 137. Peroneus brevis.  
 138, 139. Extensor longus digitorum; 138, the fleshy part; 139, the tendon divided into four portions on the back of the foot.  
 140. Peroneus tertius.  
 141, 142. Extensor longus pollicis; 142, its tendon. Under this and the tendons of the extensor longus digitorum, those of the extensor brevis are partially seen.  
 143, 144. Tibialis anticus; 144, the tendon, which is cut off in the right foot.  
 145. Left abductor pollicis.  
 146. Flexor brevis digitorum.  
 147. Annular ligament of the ankle.  
*Plates IX. and X.*—A front view of the deeply-seated muscles. Those of the first and second orders, expressed in the former plates, have been removed: the right half represents those of the third, and the left those of the fourth layer.
- ### *A. In the Head, Neck, and Trunk.*
- 1, 2. Orbicularis palpebrarum; 1, the exterior; 2, the interior portion.  
 3. Corrugator supercilii.  
 4. Levator palpebræ superioris, et rectus oculi superior, which are cut through near their insertion.  
 5. Rectus externus oculi cut through.  
 6. Obliquus inferior cut through.  
 7. Temporalis.  
 8, 9. Masseter; 8, the anterior; 9, the posterior portion.  
 10. Levator anguli oris.  
 11. Depressor anguli oris cut through near its apex.  
 12. Or-



# MUSCLE.

12. Orbicularis oris.
13. Nasalis labii superioris.
14. Trachelo-mastoideus.
15. Posterior belly of the digastricus.
16. Scalenus medius.
17. Scalenus anterior.
18. Rectus capitis anticus major.
19. Longus colli.
20. Sterno-thyroideus.
21. Hyo-thyroideus.
22. Mylo-hyoideus.
23. Intercostales externi.
24. ———— interni.
25. Transversus abdominis.
26. Posterior layer of the aponeurosis of the obliquus externus abdominis.
- \* Spermatic cord cut through in front of the ring.
27. Peritoneum.
- 28—31. Diaphragm; 28, the convex; 29, the concave surface; 30, the tendon; 31, the crura.
- 32, 33. Psoas minor; 33, the tendon.
- 34, 35. Psoas major; 35, the tendon.
36. Iliacus internus.
37. Quadratus lumborum.

## B. In the Upper Extremities.

- 38, 39. Subscapularis; 39, the tendon.
- 40, 41. Teres major; 41, the tendon.
42. Short head of the biceps cut off.
43. Coracobrachialis.
44. Place where the biceps has been cut.
- 45, 46. Brachialis internus; 46, the tendon.
- 47, 48. Inner head of the triceps; 48, the tendon.
- 49, 50. Extensor carpi radialis longior; 50, the tendon.
51. Extensor carpi radialis brevior.
52. Remainder of the pronator teres, which has been partly cut away.
53. Supinator brevis.
- 54, 55. Flexor profundus; 55, its four tendons.
- 56—58. Flexor longus pollicis; 56, the fleshy belly; 57, the tendon; 58, the accessory portion.
59. Pronator quadratus.
- 60—63. Lumbricales.
- 64, 65. Flexor brevis pollicis; 65, the tendons inserted into the sesamoid bones.
66. Adductor pollicis.
67. Adductor metacarpi minimi digiti
- 68—71. Interossei interni.
- 72—74. ———— externi.
75. Annular ligament of the wrist.
76. The penis cut off: the erectores and acceleratores urinæ are imperfectly seen behind it.
77. Sphincter ani externus.
78. Transversus perinei.

## C. In the Lower Extremities.

79. Gluteus minimus.
80. Obturator externus.
81. Adductor brevis femoris.
82. ———— magnus femoris.
83. Semimembranosus.
- 84, 85. Gracilis; 85, its tendon.
86. Biceps femoris.
87. Peroneus longus.
88. ———— brevis.
- 89, 90. Tibialis posticus; 90, the tendon.
- 91, 92. Flexor longus digitorum; 92, the tendon.

93. Extensor brevis.

*Plates XII. and XIII.* Back view of the muscles: the superficial stratum is represented on the right, and the second on the left side.

## A. In the Head, Neck, and Trunk.

- 1, 2. Occipital portion of the epicranium; 1, the tendinous; 2, the fleshy part.
3. The frontal portion of the epicranium.
4. The aponeurosis of the epicranium.
5. The thin and membranous portion of the aponeurosis.
6. Part of the temporal fascia.
- 7, 8. Attollens auriculæ; 7, the fleshy; 8, the tendinous part.
9. Orbicularis palpebrarum.
10. Anterior auris.
11. Retrahentes auriculæ.
12. Zygomaticus major.
- 13, 14. Masseter; 13, the anterior; 14, the posterior portion.
15. Pterygoideus internus.
16. Mylo-hyoideus.
17. Platysma myoides.
- 18, 19. Sterno-cleido-mastoideus; 18, the fleshy; 19, the tendinous part.
20. Biventer cervicis: its tendinous origin from the head is seen on the left side.
21. Splenius capitis: its origin is also seen on the left side.
22. Levator scapulæ.
- 23—27. Trapezius; 23, the fleshy part; 24—27, the tendinous portion; 24, the attachments to the occiput; 25, the part contiguous to the opposite muscle; 26, the attachment to the spine of the scapula; 27, to the acromion.
- 28—31. Latissimus dorsi; 28, the fleshy; 29, the tendinous part; 30, attachment to the sacrum; 31, to the ilium.
32. Right obliquus externus abdominis.
33. Serratus posticus superior.
- 34, 35. Rhomboideus minor; 34, the fleshy; 35, the tendinous part.
- 36, 37. Rhomboideus major; 36, the fleshy; 37, the tendinous part.
- 38—42. Serratus posticus inferior; 38, the tendinous origin; 39—42, attachments to the four last ribs.
43. Left obliquus internus abdominis.
44. Serratus magnus.
45. Sacrolumbalis.
46. Longissimus dorsi.
47. A portion of the longiss. dorsi, transversalis cervicis, trachelo-mastoideus, and splenius colli, comes into view here.
48. Spinalis dorsi.
- 49—51. 9th, 10th, and 11th intercostales externi.
52. 11th intercostalis internus.

## B. In the Upper Extremities.

53. Supraspinatus.
54. Infraspinatus.
55. Teres minor.
56. Teres major.
57. Deltoides.
58. Biceps brachii.
- 59—61. Triceps cubiti.
62. Common tendon of the three heads of the triceps.
63. Anconeus.



# MUSCLE.

64. Brachialis internus.
65. Supinator longus.
- 66, 67. Extensor carpi radialis longior; 67, its tendon.
- 68, 69. Extensor carpi radialis brevior; 69, its tendon.
70. Extensor primi internodii pollicis.
- 71, 72. Extensor secundi internodii pollicis.
- 73, 74. Extensor tertii internodii pollicis.
75. Extensor communis digitorum, with its tendons.
- 76, 77. Extensor carpi ulnaris, and its tendon.
- 78, 79. Flexor carpi ulnaris, and its tendon.
80. Palmaris longus.
81. Flexor digitorum sublimis.
82. ————— profundus.
- 83, 84. Indicator, and its tendon.
85. Supinator brevis.
- \* Ligamentum carpi commune dorsale. The interossei are not marked with any numbers.

## C. In the Lower Extremities.

86. Gluteus maximus.
- 87, 88. Gluteus medius, and its tendon.
89. Piriformis.
90. Geminus superior.
91. ————— inferior.
92. Obturator internus.
93. ————— externus.
94. Coccygeus.
95. Levator ani.
96. Sphincter ani externus.
97. Transversus perinei.
98. Quadratus femoris.
99. Tensor vaginæ femoris.
100. Vastus externus.
- 101—103. Biceps femoris; 101, long head; 102, short head; 103, tendon.
104. Semi-membranosus.
105. Semi-tendinosus.
106. Adductor magnus.
107. Gracilis.
108. Tendon of the sartorius.
109. Vastus internus.
110. Inner head of the gastrocnemius.
111. Outer head of the gastrocnemius. In the left leg these are removed.
112. Tendo Achillis.
113. Soleus.
- 114, 115. Plantaris, and its tendon.
- 116, 117. Peroneus longus, and its tendon.
- 118, 119. ————— brevis, and its tendon.
120. Flexor longus pollicis.
121. Tendon of the tibialis posticus.
122. Popliteus.
123. Adductor minimi digiti.
124. Flexor brevis digitorum.

*Plates XIV. and XV.* A back view of the more deeply-seated muscles: those of the first and second orders have been removed. The muscles of the third layer are represented on the right, and those of the fourth on the left side.

## A. In the Head, Neck, and Trunk.

- 1—4. Biventer cervicis; 1, the first belly; 2, the middle tendon; 3, portion derived from the spinous process of the first dorsal vertebra; 4, the second belly attached by tendon to the occiput.
5. Complexus.
6. Trachelo-mastoideus.

7. Transversalis cervicis.
8. Cervicalis descendens.
9. Scalenus medius.
10. ————— posticus.
11. Common origin of the sacrolumbalis and longissimus dorsi.
12. Division of the common origin.
- 13—15. Sacrolumbalis; 14, tendon inserted into the 11th rib; 15, tendon inserted into the 1st rib. The intermediate tendons are not numbered.
16. Longissimus dorsi.
17. Semispinalis dorsi.
18. Spinalis dorsi.
19. Semispinalis cervicis.
20. Interospinales cervicis. Two only are numbered; the others are easily distinguished.
21. Transversus abdominis.
22. Common tendon of the obliquus internus abdominis and serratus posticus inferior cut through.
23. Rectus capitis posterior minor.
24. ————— major.
25. Obliquus capitis superior.
26. ————— inferior.
27. Left multifidus spinæ. Its upper part is covered by the semispinalis cervicis.
28. Intertransversarii lumborum; of which two only are numbered.
29. Levatores costarum breves.
30. ————— longi.
31. Intercostales externi.
32. ————— interni. Those of the left side only are numbered.
33. Quadratus lumborum.

## B. In the Upper Extremities.

34. Subscapularis.
35. Teres major.
36. Biceps brachii.
37. Inner head of the triceps.
38. Outer head of the same cut through.
39. Remaining portion of the long head.
40. Common tendon of the three heads.
41. Brachialis internus.
- 42, 43. Extensor carpi radialis longior, and its tendon.
- 44, 45. ————— brevior, and its tendon.
46. Supinator brevis.
47. Flexor longus pollicis.
48. Pronator quadratus.
49. Flexor digitorum profundus.
50. Pronator teres.
51. Tendons of the extensor communis cut off.
52. Tendon of the abductor minimi digiti cut off.
53. Adductor ossis metacarpi digiti minimi.
54. Flexor brevis pollicis.
55. Adductor pollicis.
- a—d. Interossei interni.
- e—g. ————— externi.
56. Common tendons formed by the junction of those of the extensor communis, interossei, and lumbricales.

## C. In the Lower Extremities.

57. Iliacus internus.
58. Psoas magnus.
59. Common tendon of the two preceding muscles.
60. Gluteus minimus.
- 61, 62. Obturator internus, and its tendon.
- 63, 64. ————— externus, and its tendon.



- 65, 66. Semimembranosus, and its tendon.  
 67, 68. Gracilis, and its tendon.  
 69. Adductor magnus femoris. The tendon is marked with an \* on the left side.  
 70—72. Biceps femoris; 70, the short head; 71, the tendon; 72, cut edge of the long head.  
 73, 74. Divided heads of the gastrocnemii.  
 75. Plantaris cut off.  
 76, 77. Popliteus, and its tendon.  
 78, 79. Tibialis posticus, and its tendon.  
 80, 81. Flexor longus digitorum, and its tendon.  
 82, 83. ————— pollicis, and its tendon.  
 84, 85. Peroneus longus, and its tendon.  
 86, 87. ————— brevis, and its tendon.  
 88. Extensor brevis digitorum.  
 89. Flexor accessorius.

Plate XVI. Lateral view of the muscles.

A. In the Head, Neck, and Trunk.

- 1, 2. Occipital portion of the epicranii; 1, the tendinous origin; 2, the fleshy part.  
 3. Frontal portion.  
 4. The aponeurosis.  
 5. The middle thin part of the aponeurosis.  
 6. Part of the temporal fascia.  
 7, 8. Attollens auriculæ; 7, the tendinous origin; 8, the fleshy portion.  
 9. Retrahentes auriculæ, three in number.  
 10. Anterior auriculæ.  
 11, 12. Orbicularis palpebrarum.  
 13. Compressor nasi.  
 14. Orbicularis oris.  
 15. Zygomaticus major.  
 16. Depressor anguli oris.  
 17. Buccinator.  
 18, 19. Masseter; 18, the anterior; 19, the posterior portion.  
 20. Præhygoideus internus. Between 20 and 24 the stylo-hyoideus and stylo-glossus are partially seen.  
 21—23. Platysma myoides; 21, the lower part arising from the chest; 22, accessory fasciculi from the side of the neck; 23, ruforius of Santorini.  
 24, 25. Sterno-cleido-mastoideus; 24, the fleshy; 25, the tendinous part.  
 26. Biventer cervicis.  
 27. Splenius capitis.  
 28. ————— colli.  
 29. Scalenus medius.  
 30. Levator scapulæ.  
 31—33. Trapezius; 31, the fleshy part; 32, tendinous attachment to the occiput; 33, to the spine of the scapula and acromion.  
 34—38. Latissimus dorsi; 35, tendinous attachment to the ilium; 36, 37, 38, attachment to the ribs.  
 39, 40. Pectoralis major; 40, its attachment to the aponeurosis of the obliquus externus abdominis.  
 41. Pectoralis minor.  
 42—48. Serratus magnus; 42, the origin from the 3d rib; 43—48, origin from the 4th to the 9th ribs.  
 49—54. Obliquus externus abdominis; 49, the fleshy portion; 50—53, the aponeurosis; 50, projection of the obliquus internus; 51, of the rectus; 52, tendinous interrelations of the rectus; 53, prominence of the pyramidalis.  
 54. Abdominal ring.  
 55. Cremaster.

B. In the Upper Extremities.

56. Infraspinatus.  
 57. Teres minor.  
 58. ————— major.  
 59. Deltoides.  
 60. Acromion.  
 61, 62. Biceps and its tendon.  
 63. Brachialis internus.  
 64—66. Triceps; 64, the long head; 65, the outer; \* the inner head; 66, the common tendon.  
 67. Olecranon.  
 68, 69. Supinator longus and its tendon.  
 70. Pronator teres.  
 71. Flexor carpi radialis.  
 a. Palmaris longus.  
 b. Flexor sublimis.  
 72. Flexor longus pollicis.  
 73, 74. Flexor carpi radialis longior, and its tendon.  
 75, 76. ————— brevior, and its tendon.  
 77—79. Extensor communis digitorum, with the extensor proprius auricularis; 77, the extensor communis; 78, extensor proprius; 79, their tendons.  
 80. Extensor carpi ulnaris.  
 81. Flexor carpi ulnaris.  
 82, 83. Extensor primi internodii pollicis; 83, its divided tendon.  
 84, 85. Extensor secundi internodii, and its tendon.  
 86. Tendon of the extensor tertii internodii.  
 87. Common ligament of the back of the wrist.  
 88. Abductor pollicis.  
 89. Opponens pollicis.  
 90. Adductor pollicis.  
 91. Abductor indicis.  
 92. Prior interosseus indicis.  
 93—97. The thumb and fingers.

C. In the Lower Extremities.

98. Pectineus.  
 99. Adductor longus.  
 100—101. Sartorius and its tendons: 100, \* sartorius of the right thigh.  
 102. Tensor vaginæ femoris, with its tendon cut from the fascia.  
 103. Gluteus medius.  
 104, 105. Gluteus maximus, and its tendon.  
 106, 107. Semitendinosus, and its tendon.  
 108—110. Biceps; 108, the long head; 109, the short head; 110, tendinous insertion in the fibula.  
 111, 112. Vastus externus, and its tendon.  
 113, 114. Rectus femoris, and its tendon.  
 115. Ligamentum patellæ.  
 116, 117. Vastus internus, and its tendon. c, tendon of the right vastus internus.  
 118. Tendon of the gracilis.  
 119. ————— femimembranosus.  
 120. Outer head of the gastrocnemius.  
 121. Inner head of the gastrocnemius.  
 122. Soleus.  
 123. Tendo Achillis.  
 124. Tendon of the plantaris.  
 125, 126. Peroneus longus, and its tendon.  
 127. Peroneus brevis, and its tendon.  
 e. Ligament of the tendons of the peronei.  
 128—132. Extensor longus digitorum pedis; 129—132, its tendons proceeding to the four smaller toes; the tendons of the extensor brevis appear between them.



- 133. 134. Peroneus tertius, and its tendons.
- 135. Tendon of the extensor longus pollicis.
- 136. 137. Tibialis anticus, and its tendon.
- 138. 139. Abductor digiti minimi, and its tendon.
- 140. Tendon of the flexor brevis digiti minimi.
- 141. Annular ligament of the ankle.
- 142. 143. Flexor longus pollicis; 143, its tendon contained in a peculiar sheath.
- 144. 145. Flexor longus digitorum, and its tendon.
- 146. Tendon of the tibialis posticus.
- 147. Ligamentum laciniatum malleoli interni.
- 148. Abductor pollicis.
- 149. Flexor brevis pollicis.
- 150. ——— digitorum.

*Phænomena of the Action of the Animal Muscular System.*—We have spoken hitherto of the power of motion belonging to the muscles abstractedly from the phenomena, which it presents when in exercise. The latter will engage our attention at present. They are referrible to contraction, as that is the essentially active state of a muscle, relaxation being merely a passive condition of the organ.

Contraction is by no means an uniform phenomenon. When a muscle is divided, or its antagonist is paralysed, it takes place slowly and insensibly: the power which presides over this we have called the contractility of tissue. The action of an irritating body in the muscles of an animal recently killed, causes a quivering of the flesh, an oscillation affecting the fibres throughout, but not producing any very sensible effect on the whole mass, not bringing together its attachments. The fibres are drawn from the ends towards the centre, and then restored; and these motions are repeated with great rapidity; the muscle is thrown into a tremulous state. This kind of motion is exemplified in the shaking caused by cold, by fear, on the access of intermittent fevers, &c. The operation of the will, or irritation of a nerve, causes a sudden contraction of the whole muscle. A permanent state of contraction is called spasm: quickly repeated contractions are called convulsions.

When a muscle contracts, all its fibres are rendered shorter, and, consequently, the length of the whole organ is diminished: hence the points, to which its extremities are connected, are drawn towards each other, and move respectively, more or less, according to their relative firmness. The surface of the fibres is also observed to be wrinkled, or folded transversely. As its fibres are drawn from the extremities towards the middle, it becomes thicker, and appears to swell. Hence the prominence of the superficial muscles, when the body is in a state of exertion. The statuary and the painter know that the character of the surface is very different in a man at rest, and one in any violent action; they are aware that the muscles, employed in any particular motion, swell and cause prominences, which must be carefully displayed in their representations; to express these faithfully is one of the great difficulties of their art. The swelling is accompanied with a hard and rigid state of the muscle, which is more clearly characterised, in proportion as the exertion is greater. If we place the hand on the masseter, and shut the mouth, these phenomena are immediately rendered apparent.

As the muscle is shortened and swells in its middle, do these two changes compensate each other, so that the bulk remains the same? or is it rendered on the whole larger or smaller? All these opinions have been maintained. Borelli placed a man in equilibrio on a piece of wood, and then made him contract the muscles of the lower limbs: the balance was not destroyed, and he concluded that the muscles gain nothing in their contraction. The arm has been im-

mersed in a jar of water, and some of its muscles then contracted: the height of the fluid has not been changed. There seems no reason to conclude that the bulk of these parts undergoes any change in their contraction: but it must be difficult to prove the point satisfactorily: fortunately it is unimportant.

The colour of the muscle is not changed in its contraction. We have already mentioned that the stream of blood from an opened vein is increased by exerting the muscles, either from the pressure of their bellies on the venous trunks, or from that of their fibres on the veins ramifying in their substance. The colour of the muscle does not depend on the blood circulating in it, but on that which is combined with its substance; and it cannot therefore be affected by contraction of the organ.

None of the changes, which we have just described as occurring in the muscular fibres, affect the tendons: they are completely passive, and merely follow the impulse given to them by the former.

When the will ceases to act on a muscle, a series of phenomena exactly opposite to the foregoing ones is exhibited. It becomes softer; the swelling of its middle subsides; and all the wrinkles are destroyed: it recovers, in a word, its original state, in which it continues until new irritation, or fresh exertion of the will, occurs. This is called the relaxation of a muscle. In this condition of the muscular organs, parts of the body often execute motions simply in consequence of their weight; such is the nodding of the head forwards when we fall asleep in the erect posture; the falling of the whole body to the ground when we faint, &c. When the limb is not supported, its weight often prevents it from being brought into the middle state. Paralysis presents numerous phenomena of this description.

Relaxation, therefore, is that condition of a voluntary muscle, in which it is not affected by the will, nor by any exertion of the brain or nerves; in which its tissue is quite passive, so that it will yield to any moving power. When the elbow has been bent by the biceps, the cessation of the volition leaves the muscle in a relaxed state, although the elbow may still continue bent: if the triceps contracts, and extends the joint, the biceps is elongated, and thus restored to the state that it was in before the bending of the articulation. The muscle may be considered as relaxed in the bent state of the joint, as well as in the extended: but in the latter it is also stretched. It does not assume this elongated form from any power of its own; but simply from the motion of the bone, to which its antagonist is affixed. Now the term relaxation is sometimes applied to that state of the muscle, which is produced by approximating its two insertions, when the will is not exerted: in this sense it is opposed to stretching of the muscle, or its state when the two insertions are moved to a distance from each other.

Physiologists have attempted to calculate the shortening of a muscle in its contraction: Bernouilli, and the other mathematicians, stated the loss of length at one-third. From observations on the intercostals, Haller affirmed that they might lose one-half. The sphincters are clearly capable of greater contraction than this. The muscles of the extremities do not experience in general so considerable a diminution: yet they contract much beyond their ordinary extent in fractures; as the extensors of the knee in fractures of the patella, &c.

A remarkable difference is observed in the duration of the contractions, according as they are excited naturally or artificially. When the muscle itself or its nerve is irritated in a living or recently slaughtered animal, the contraction is followed almost suddenly by relaxation: neither state con-



## MUSCLE.

tinues long, although the stimulus be kept up. The same phenomena are produced whether galvanism, mechanical, or chemical agents are employed. The contraction or convulsion is more forcible and rapid at first: it gradually languishes; and soon the muscle remains at rest. When, on the contrary, contraction is produced by the will, it can be maintained for a considerable time. The support of burdens, the act of standing, and the maintaining a limb in any attitude, &c. &c. prove this fact. Tetanus affords us a terrible example of the permanence of contraction under morbid irritation. This continued exertion, however, fatigues the muscle much more than alternate contraction and relaxation: hence, when we are standing a long time, we throw the weight of the body alternately on the two limbs, so as to rest the muscles of each successively. The law of intermission, to which the animal muscular system is particularly subject, prevents the muscles from continuing in a contracted state beyond a certain time: the sense of fatigue admonishes us of the necessity of relaxation, and very quickly becomes so urgent that it cannot be neglected; it soon rises to intolerable pain, which forces us to intermit the exertion. A person may soon convince himself of this by holding a weight in the hand with the arm and fore-arm horizontally extended; after a short time tremulous motions occur in the muscles, and the limb sinks in spite of the most resolute exertion of the will.

Various circumstances influence the velocity of the contraction. When stimuli are directly applied to an exposed muscle, the contractions depend on the state of vitality of the muscle, and on the nature of the stimulus. They are performed, and succeed each other so quickly at the beginning of the experiment, that the eye can hardly follow them; they gradually become weaker, but may be excited by a more powerful stimulus, which also soon loses its effect. Irritation of the nerve produces a more rapid contraction than that of the muscle itself; and the velocity is very considerable when an active animal, and an active stimulus, as galvanism, are both employed. The velocity or force of the contraction are not greater when all the nerves of a muscle are irritated, than when one only is acted on. The velocity of muscular contraction produced in obedience to the will is very variable, and is regulated by volition. There are great differences between individuals in this respect, and these differences are foreign to the general strength of the muscular system. We shall gain a general notion of the powers of muscles by reflecting on the motions of the racer, the greyhound, or a practised runner; of the fingers in playing on musical instruments, as the violin, flute, piano-forte, in writing, &c.; of the lower limbs, in jumping, kicking, &c. The possible rapidity of muscular contraction depends much on exercise. What can be more awkward than the first attempts at writing, drawing, playing on a musical instrument, or performing any of the mechanical processes in the arts? and what can be a greater contrast to these efforts than the celebrity and precision which practice never fails to confer in any of these departments? In running, jumping, or any other motions of the body, one man can perform with ease, what another, with equal original powers, cannot possibly effect, merely because he has never made the attempt. In all such exertions there is a point beyond which we cannot go; and we soon arrive at this point.

By considering the motions employed in transporting the body in the examples of the fleetest horses, Haller concludes that the elevation of the leg must have been performed in  $\frac{1}{10}$ th of a second. He calculates that the rectus femoris is shortened three inches in  $\frac{1}{280}$ th of a second in the most rapid motions of a man. He says that the quickest motions are ex-

cuted by the muscles concerned in articulation; in an experiment he pronounced 1500 letters in a minute. The relaxation of a muscle occupies as much time as its contraction; therefore the contraction of a muscle in pronouncing a letter must be executed in  $\frac{1}{3000}$ th of a minute, and in much less time in some letters, which require repeated contractions of the same muscle, as *r*. If the tremors occurring in the pronunciation of this letter are ten, the styloglossi must contract in  $\frac{1}{30000}$ th of a minute, or in  $\frac{1}{12}$ th of a third. According to some accounts of distances, which pigeons have performed, an agitation of the wing must have been executed in the  $\frac{1}{11}$ th of a third, or within  $\frac{1}{52}$  fourths. *Element. Physiolog. tom. iv. p. 483.*

There is a great difference in the force of contraction of the animal muscles, according as it is excited by irritation or by the influence of the brain. By stimulating an exposed muscle we produce a rapid and abrupt, but, in general, feeble contraction, which is always far behind that energy which is communicated through the brain. The organic muscular system is principally set in motion by the immediate application of stimuli, and never exhibits exacerbations of power corresponding to those which the animal contractility presents under certain circumstances. We have already seen that the latter property may be brought into action by irritating the brain in experiments, or by its excitation through the will or by sympathy. In the first case the action is never very energetic, whether we irritate the brain or the nerves: a rapid convulsive motion is produced, analogous to that caused by exciting the muscles themselves. Galvanism is the most powerful means of exciting such contractions; the effect of which is best appropriated by irritating a single nerve; for, when the brain or spinal marrow is acted on, the whole system is thrown into convulsions, and the contractions of the antagonist muscles destroy each other.

Two causes, namely, the state of the muscles and of the brain, influence the force of muscular contraction during life. If the energy of the brain be equal, a strongly marked muscle, of which the outline can be traced through the skin, because its fibres are well nourished and strong, will contract much more powerfully than a thin and flat one, with soft and pale fibres. In statues, which represent strength, the muscular forms are always energetically developed.

The influence of the brain has again a great effect in augmenting the energy of muscular contraction. In general, the will determines the degree of power developed in the voluntary motions, and adapts it exactly to the effect which we design to produce: if we simply elevate the arm, or raise by its elevation one pound or a hundred pounds, the force of the contraction is precisely adequate to the object. Various causes will give to the will of one individual a greater energy and steadiness than to that of another, and therefore enable him, with equal muscular powers, to produce much more considerable effects. Many excitations, which are foreign to the will, very greatly exalt the power of the brain, as we see in maniacs, in men transported by rage, in the delirium of some fevers, &c. The slender muscles of a woman in such states often surpass in energy those of a powerful man in his ordinary condition.

Calculations of the force of muscles cannot arrive at much accuracy, because the data, on which they are founded, cannot be precisely ascertained. The vital forces vary infinitely: they are not the same in two individuals: the influence of the brain and the strength of the muscular organisation are constantly varying in their relative proportions in the same subject. Vital phenomena elude calculation, and present, like the forces from which they are de-



duced, a character of irregularity, which distinguishes them essentially from physical phenomena. We may, however, conclude, that a muscular effort, carried to its highest degree by excitation of the brain, is capable of producing astonishing effects; such are the rupture of strong tendons, of the patella, &c. and the resistance often opposed to the violent extensions employed for the reduction of dislocations.

We should also remark here the surprising correctness with which the contraction of the muscle is adapted to the extent of motion which we wish to produce in a bone. "Let us suppose," says Dr. Barclay, "the circumference, in which a bone can be moved, to be twenty-four inches, that each of the inches is equally divided into twelve parts, and that the bone may be arrested at each of the divisions, which we know to be possible; with what accuracy must the muscles contract towards the centres in order to regulate their extent of motion, with so much precision, towards the circumference! In producing the several musical notes, by changes in the small aperture of the glottis, or in balancing the body on the tight or slack ropes, we know that the muscles must contract with such minuteness and accuracy, as frequently to regulate their extent of decurvation by smaller measurements than the two hundred thousandth part of an inch." The Muscular Motions of the Human Body, p. 299.

Thus it appears that the power of muscular contraction is in a compound ratio of the strength of organisation in the muscles, and of the excitation which they receive from the brain. When both these are small, the motions are feeble; when both are elevated to their highest pitch, we can hardly set a limit to the effects which they may produce. If energetic nervous influence be combined with a weak muscular tissue, or *vice versa*, the phenomena of contraction hold a middle place; and this is the kind of arrangement which we generally observe in nature. Women and children, who have weak muscles, have a nervous system easily excited; men, on the contrary, particularly athletic ones, have nerves less readily moved.

We cannot ascertain, with any degree of accuracy, the power of a given bulk of muscular fibres, as muscles do not act separately, and the mechanical disadvantages, under which they are placed in the living body, take off a great deal of their effect. Yet numerous familiar phenomena enable us to conclude that their power is very great. The extensors of the knee and ankle break respectively the patella and tendo Achillis by their contraction. When a person, with a burthen on his back, stands on tiptoe on one foot, the whole weight of the body and of the burthen is sustained by the extensors of the foot. In jumping, these muscles project the body, either in length or breadth, with vast power. Three hundred pounds have been elevated by the muscles of the lower jaw; and Thomas Topham lifted in this way a table of six feet in length, with fifty pounds attached to its farthest end. Haller informs us, that a man was drawn up six hundred feet, suspended by one finger. This author has collected in his *Elementa Physiologiæ*, lib. xi. sect. 2, § 26, a great number of instances of muscular exertion, to which the reader is referred.

The preceding examples, however, will give us but an imperfect notion of the power possessed by muscles. We have stated the facts as if the whole force of the muscle were effectually employed in elevating the weight, as in a balance the whole weight of one scale acts in raising the other. But the case is quite different in the human body, where we always have a great expence of force for the production of a trifling effect. There are numerous causes

tending to diminish the operation of these forces. In the first place, almost all the muscles are fixed to the bones near to the centre of motion; while the weight, which they have to move, is applied usually at the extremity of the lever. If we regard the bones as levers, the joints as the fulcra, and the muscles as the moving powers, it will follow, from the well known laws concerning this subject, that the nearer the muscle is inserted to the fulcrum, the less effect will it have in moving the part. Suppose we support a weight on the elbow by the action of the deltoid muscle: the fulcrum is here in the shoulder joint, and the insertion of the muscle is much nearer to that part than to the end of the bone on which the weight rests; let us state this proportion as one to three. Now if we raise 55 pounds in this way, and add five pounds for the weight of the limb, which, in order to simplify the matter, we conceive to operate entirely at the end of the bone, the power which the deltoid must exert in order to produce the effect, is not equal to 60lbs., but to  $60 \times 3 = 180$ lbs. A great number of the muscles have insertions much less favourable, much nearer to the lever than this. The biceps and brachialis internus, for example, are fixed to the fore-arm, at least eight or ten times nearer to the elbow than to the extremity of the lever at the wrist.

Secondly, muscles are fixed to the bones at unfavourable angles: if they were inserted at right angles, their whole force would be effectually applied in moving the joint, as a weight placed in a scale depresses the arm of the balance. If the muscle were parallel to the bone, the resistance would be infinite, and no effect could be produced. There are very few muscles of the former, and none of the latter kind in the animal body: almost all join the bones at angles much smaller than right angles. The deltoid is implanted in the humerus at an angle of about  $10^\circ$ . A power acting obliquely is to one acting perpendicularly as the sine of the angle of inclination is to the whole sine. In the present example, this proportion is as 1,736,482 to 10,000,000. Wherefore, if the muscle in the former case exerted a power equal to the elevation of 180lbs., in elevating 55lbs. it will, in the present view, exert a force equal to 1058lbs.

Again, the direction of the fibres, with respect to the tendon, has an important influence on the power of the muscle. The fleshy fibres have the same direction with those of the tendon, only in a few instances; and they lose more of their power in proportion as the angle, at which they are fixed to the tendon, is greater: if it were a right angle, they would have very little effect. The force exerted is to the effective force (*i. e.* to the force which acts in moving the limb) as the whole sine is to the sine of the angle at which the fibres join the tendon. If the angle be of  $30^\circ$ , these proportions are as 100 to 87; if of  $45^\circ$ , as 100 to 70; if  $26^\circ$ , as 100 to 89, &c. The largest angle formed by the outer fibres of the deltoid is about equal to  $30^\circ$ ; the smallest by the inner fibres about  $8^\circ$ . If this be taken into the account, with the two preceding circumstances, the force exerted by the deltoid in the elevation of 55lbs. would lift 1284lbs., if no causes diminished its efficacy.

It is contended further, that the force of the muscle, as estimated in the preceding calculations, must be doubled, because it will have to exert as much force in resisting the bone, which affords a fixed point at one end; as in elevating the weight at its other extremity: the force of the deltoid, in raising the 55lbs., must therefore be carried up to 2568lbs. This is stated by Borelli, and admitted and explained at length by Haller. See *Element. Physiol.* lib. xi. sect. 2, § 30.

Muscles, which go over two or more joints, cannot act upon the bone, in which they are inserted, without moving the



the intermediate articulations. These motions are resisted by the antagonist muscles, yet they consume a certain portion of the force exerted in the contraction.

The advocates of final causes have prepared an answer to these objections, which a view of the foregoing circumstances in the muscular system might give rise to. "It may be inquired," says Haller, "why the all-wise Creator admitted in the animal frame a principle of structure, according to which so large a portion of the power produced is lost. The explanation is not difficult. All the contrivances of human skill end in this, that the moving power passes through a large space, while the resistance describes a small one. In the human body, on the contrary, the effect to be produced is that the resistance should describe a large, and the power a small arc of a circle. The foot in stepping, and the hand in seizing, move over a large space: in all cases, in short, the object is, that the weight should be carried over a large, while the power moves within a small extent. Hence the velocity is increased at the expence of the power; and the loss of the latter was not regarded by the Creator, in the construction of the frame, because it was rendered subservient to the accomplishment of a more important object.

"The origins of the muscles must necessarily be derived from the trunk and adjoining parts; and they must be inserted, if the parts are to be moved, beyond the last articulation. Thus, as the wants of man required a limb composed of several moveable pieces, it necessarily followed that muscles must pass over some joints.

"The limbs are round, and of a conical figure, that they may be lighter towards their extremities. The joints could not therefore be made thick enough to elevate the muscles far from the centre of motion; and that part of the force, which is lost from the smallness of the perpendicular line drawn from the centre of motion to the direction of the muscle, was necessarily sacrificed.

"Again, as the muscles are carried over a limb constantly decreasing in size and weight, as it is necessary to unite many fibres in a small tendon, and to bring them together from different parts, so as to bear on one point, the radiated and penniform arrangements are necessary, although attended with loss of power." *Elem. Physiol. lib. xi. sect. 2, § 35.*

There are, on the other hand, many circumstances that augment the mechanical power of the muscles, when it can be accomplished consistently with the views just alluded to. The angles formed by the muscles at their insertions are generally increased in consequence of the articular ends of the bones being made thick; this increases the distance between the course of the tendon and the centre of motion. The projecting processes for muscular attachments; such as the trochanters, the protuberance of the os calcis, &c. and the bones placed in the course of tendons, as the patella and sesamoid bones, have a similar but more powerful effect. The smoothness of the cartilaginous surfaces of the joints, and the unctuous fluid lubricating them, by diminishing the effect of friction, augments the power. The different contrivances of the pulley kind act only in changing the direction of the force without augmenting its amount.

The motions produced by the muscles are either simple or compound. We shall consider the former, as it occurs in straight muscles, in those which are reflected in their course, and in circular ones. In the first case, where the muscle has an elongated form, and is terminated by a tendon, each fibre by its contraction draws the tendon in its own direction; the whole will therefore bring it towards the centre of the muscle. The whole effect of the contraction, in a long muscle, is concentrated in a single point, that is on the ten-

don. In most of the broad muscles, on the contrary, as the attachments at both ends are generally made to different points, all the fibres do not concur in one effect. The various parts of the same muscle may have different, and even opposite uses; and they are capable of contracting separately. The simplest method of determining the effect, which a straight muscle is capable of producing on the bones to which it is fixed, is, to examine the direction of the muscle from its fixed to its moveable part, and to take the inverse of that direction: the latter is always the direction of the motion. Where two bones are alternately moveable and fixed, they are moved in opposite directions. When the whole of a broad muscle is brought to bear on a single point, as in the deltoid, the middle line of direction of all the fibres must be taken for the purpose of estimating the action. Where a muscle is reflected, as the trochlearis, the peronei, &c. its action is in the line drawn from the point of reflexion to the insertion; as a force acting upon a rope which passes over a pulley, acts in a straight line from the pulley to the weight. The circular muscles surrounding the mouth, eye, &c. have no fixed or moveable points: they contract the apertures, which they surround.

The instances are very few, in which muscular motion is of the simple kind just described, or confined to a single muscle. The muscles belonging to the same part combine their actions very variously. The four straight muscles of the eye correspond nearly to the four cardinal points of a sphere: where any two neighbouring ones are contracted together, the part is moved in a diagonal, of which the sides are the lines of direction of the two muscles contracted. According as the one or the other muscle is exerted most powerfully, the eye may be moved in any line between those of the two muscles. A similar combination occurs in all the joints, where motion is admitted in various directions. When it has a radiated form, a single muscle may execute oblique motions, the lateral fibres on one side of the middle line acting more strongly than the opposite ones: the deltoid is an example; it can elevate the arm towards the front or the back of the trunk.

Again, when a part moveable in various directions is arrived towards any point, it must be rendered steady, and prevented from deviating materially, by the muscles on each side; and the extent of its motion must be limited by the antagonist muscle. Thus the head, neck, and vertebral column, may be moved forwards, backwards, to the right and left. Suppose that they are bent forwards; there must be muscles, not only to move them in that direction, but also to prevent inclination to the right or left, and to limit the motion forwards. Thus the different powers employed on this occasion may be classed under the heads of direct movers, directors, and moderators.

When we consider the effects, which may be produced by variously combining the actions of the muscles, and further, that the force, extent, duration, and order of succession of the contractions may be almost infinitely varied by the will, we shall be able to account most satisfactorily for the number of motions produced. If there are ten muscles, and each had only two degrees of contraction, the different effects produced by their combinations would be not less than 1,048,575.

Another source of the combinations of muscular motions is in the necessity of rendering one of the attachments fixed. Excepting those, which go from a bone to some soft part, as the eye, tongue, or pharynx, the muscles seldom have one extremity perfectly immoveable; and, in most cases, one end is firmer, the other looser; the former being towards the trunk, the latter towards the extremities. Even very distant muscles may



may be concerned in fixing the attachments of muscles, so that these powers are connected over almost the whole body, and may assist or impede each other's actions. If the deltoid acted alone, it would draw down the scapula and clavicle, as well as elevate the humerus; if, therefore, we wish to produce the latter effect, the former bones must be fixed by the levator scapulæ, rhomboidei, trapezius, &c. But these muscles come from various vertebrae of the neck, which are themselves moveable: if these vertebrae were drawn downwards by the muscles just enumerated, the deltoid would still not have a fixed point to act from. The neck must therefore be fixed by its extensors; by the multifidi, sacrolumbales, longissimi, cervicales descendentes, and all the numerous muscles lying on the back of the spine. By the combined action of so many muscles, the deltoid will at last be enabled to produce its full effect, and to exert its whole force in elevating the humerus. Let us suppose a person lying on the ground, and endeavouring to raise himself by seizing any object above him. The hand, being retained by its flexors, is rendered as firm as the object which it holds. The deltoid will now elevate the scapula and clavicle; we confine our view to this muscle, to make the statement more short; for all the muscles passing between the humerus and the scapula and trunk will concur with it. The deltoid, then, elevates the scapula and clavicle, and through them the trunk of the body; all the muscles between the hand and the humerus are employed in fixing the latter for the action of the deltoid. If a person in the recumbent posture endeavour to bend the head forwards, the recti abdominis are immediately rendered tense: they are exerted for the purpose of fixing the sternum, and affording a firm point for the action of the sterno-cleido-mastoidei. If the trunk be bent forwards, the latter muscles fix the sternum for the action of the recti. These instances are sufficient to exemplify the mode in which the muscular motions are combined; the same principle extends throughout the whole body. The combinations are still more numerous and complicated in cases where the whole body is moved.

"As all the motions that vary the position of the head, neck, trunk and extremities, must likewise vary the centre of gravity, a number of muscles must be thrown into action, merely on purpose to preserve the equilibrium, if a person be sitting, or standing, or moving from one place to another: these muscles, if a name were necessary, might be called librators. In general, we are not conscious of their action, unless when a state of morbid sensibility happens to shew a connection between them and the muscles employed in changing the positions; or unless, when happening to perform a motion which we did not intend, we fall to the ground; or all on a sudden change the librators with a violent jerk of the whole system. It is from the general and prompt co-operation of the different muscles in harmonizing the flexions and extensions, the fixations and librations throughout the several parts of the system, from the yielding yet steady flexibility of the joints, from the oblique apposition of their surfaces, from the angles, the curves, and the varied directions of the bones united by articulation, and from the elastic substances interposed, that the system is enabled to resist so successfully the violent concussions to which it is exposed in running, leaping, stopping suddenly, or falling from a height. By these contrivances, under the direction of the vital principle, concentrated forces are so admirably and suddenly disposed and diffused throughout every part, that even the functions of the most delicate are, in ordinary cases, seldom impeded. To these, therefore, more than to the strength of the bones and muscles, are we frequently in-

debted, in cases of concussion, for the safety of the viscera contained in the cranium, thorax and abdomen; for the safety of the blood-vessels, nerves and absorbents; and even for the safety of the bones and muscles. This must be obvious, from the violent shocks to which men are exposed, from the want of libration, when they are intoxicated; from the violent jerks we often receive in attempting suddenly to recover our balance; from the distortions of the joints and the bones in cases of rheumatism; from the great number of luxations and fractures arising from unequal action in the muscles, when not prepared to meet with the accident; and also from the practice of bending iron bars over the forearm when the muscles are every way prepared for the resistance." Barelay on the Muscular Motions, p. 301.

The effect produced by the action of each particular muscle is considered in its description; we shall point out here the mode, in which the individual muscles co-operate, in some cases where a great number of them are employed, as in standing, walking, &c. The mechanism of these attitudes and motions, so far as the bones and joints are concerned, is explained in the article EXTREMITIES: our principal object at present is to point out the part which the muscles perform.

*Standing* is that condition of the body, in which an animal is supported by his legs extended and fixed. If a man in the erect posture suddenly dies, or discontinues from any cause those efforts which are necessary to maintain the erect attitude, the joints of the lower limbs would yield to the weight of the body, bend, and allow the trunk to come to the ground. Standing, then, is produced by the continued action of the extensor muscles of all the joints; and, for this reason, it is so much more fatiguing than walking, in which the muscles are alternately contracted and relaxed. If the trunk were held immoveable in this attitude, the muscular exertion necessary for its continuance could be supported only for a very short time, as any person may convince himself by standing perfectly erect and motionless. Generally, however, there is a series of vacillations, of very small alternate flexions and extensions, to which the numerous and easily moving joints of the body are excellently adapted, and by which the fatigue of a constant extension is avoided: we accomplish the same object, too, by throwing the weight of the trunk alternately on the opposite legs.

To bestow on an animal the power of maintaining his body in a vertical position, all its parts should be so disposed, as to be easily held in a state of equilibrium; the muscles should have the power of correcting continually the movements of aberration; the line of gravity of the whole body should fall within the place covered by the feet, and lastly, the feet themselves should be so constructed as to seize, in a manner, the inequalities of the ground, and fix themselves to it. Man is the only animal, in which all these conditions are united in the necessary degree. See EXTREMITIES.

In the attitude of standing, the sole of the foot is firmly pressed against the ground by all the muscles which bend the toes (flexor longus and brevis digitorum pedis, and pollicis pedis, lumbricales, interossei, flexor brevis minimi digiti), and by those, which extend the foot (the gastrocnemius, soleus, plantaris, tibialis posterior, peroneus longus et brevis). The weight of the body would bend the leg on the foot; it is extended and maintained erect by the muscles of the calf. This motion in the direction backwards is limited by the flexors of the ankle (tibialis anticus, extensores digitorum et pollicis, peroneus tertius), which prevent the leg from being carried too far in that direction: on the  
sides



## MUSCLE.

sides the leg is fixed by the tibialis, the peronei, and the opposite forces of the flexors of the great and the smaller toes, which correct any tendency to lateral deviations. These muscles, then, surrounding the leg in all directions, sustain it firmly on the foot, like so many cords passing from it to be fixed to the earth.

The powerful vasti and cruralis extend the knee-joint, and preserve the femur in the same vertical line with the leg, preventing that flexion of the knee, which the inclination forwards of the thigh, and the position of the pelvis behind a straight line drawn from the knee, would tend to produce. These powers are balanced and limited by the flexors of the knee (the biceps, semitendinosus, semimembranosus, gracilis).

The pelvis is extended on the thighs by the glutei magni moderated by the rectus cruris, psoas magnus et iliacus internus.

The trunk, taken altogether, would fall forwards if left to itself: the pelvis may be carried freely forwards on the heads of the thigh bones, and the chest may be bent on the pelvis; but these parts cannot be moved in the opposite direction. The weight of the head, the ordinary position of the upper limbs in front of the body, and the prominence of the abdominal viscera, give to the trunk this inclination forwards. The glutei magni, the sacrolumbales, the longissimi dorsi, and all the extensors of the spine, correct this tendency. The psoas and iliacus, the rectus cruris, and the rectus abdominis in some degree, are the moderators of this extension.

The vertebral column gives the point of support for the head; which, as it is produced considerably in front of its articulation with the atlas, and consequently always falls spontaneously forwards in a person dropping asleep, requires, for supporting it in equilibrio, numerous extensor muscles, as the recti postici, obliqui superiores, trachelo-mastoidei, complexi, splenii capitis, trapezii. These are balanced by few and weak muscles in front;—the recti antici and longi colli. Several muscles on the lateral aspects prevent either the head or neck from deviating towards the side.

We have not enumerated all the powers exerted in standing: since they are so numerous, and must be constantly contracted to maintain the body erect, we shall no longer wonder at the fatigue produced by that attitude, and the necessity for resting the muscles alternately by varying the bearing on the lower limbs.

*Walking.*—All the motions, in which the body is transported from one place to another, require that an impulse should be made, in a certain direction, on its centre of gravity. To this end, a number of articulations more or less bent are extended; these are so placed, that their extension is free in the direction of the centre of gravity, and confined in the opposite one; so that the movement produced takes place in the first of these directions. The body may be compared to a spring composed of two branches, one of which rests on an immoveable support. If these branches, after being approximated by an external force, are set at liberty, they separate, until they again form the angle which they formed before the compression: but, as the supported branch cannot force the obstacle, the motion takes place altogether in the opposite direction, and the centre of gravity of the spring is moved away from the obstacle with more or less velocity. In the progressive motions of the body the flexor muscles are the force which compresses the spring; the extensors are the elasticity which tends to separate its branches; and the resistance of the ground is the obstacle. In walking, the centre of gravity

is alternately moved by one limb, and supported by the other, without the body being ever entirely detached from the ground: by the latter circumstance it is distinguished from leaping.

Suppose the person to be standing, and to step forwards with the left foot, the ankle and hip of that limb are bent by their respective flexors; the sole of the foot is detached from the ground by the muscles of the calf and the other extensors. The hip is then bent to a more acute angle, the extensors of the knee advance the leg to a straight line with the thigh, and thus suspend the foot over the part on which it is to rest: they then are relaxed, and allow the foot to come to the ground. The body is now supported on both limbs; the left thigh is inclined forwards, the right backwards, on the pelvis: the former leg forms an obtuse, and the latter an acute angle with the foot. The extensors of the right foot now act; the end of this member cannot move the ground; the heel, the leg, and the thigh are consequently elevated, and the impulse thus given to the pelvis moves forward the trunk of the body, which describes a small circle round the fixed point afforded to it by the left leg. That leg is now carried forwards on the foot by the flexors of the ankle, the femur is advanced by the extensors of the knee, and the trunk by the flexors of the hip. The right leg, having given this impulse to the trunk, is advanced by the flexors of the hip, and extensors of the knee, in front of the other, and brought to the ground; when the extension of the left foot in its turn propels the trunk on the right limb. The motion of the body is assisted, by inclining the trunk forwards over the advanced limb: this is effected by a relaxation of the extensors, and the contraction of the flexors of the hip, the rectus and obliqui abdominis of the same side. This attitude of the trunk in progression, which we avoid as ungraceful, particularly facilitates the ascent of an inclined surface. In this case, the body must not only be thrown forwards at each step, but elevated against its own weight by the extensors of the advanced knee, and of the foot left behind: hence this mode of progression is very fatiguing.

In *leaping*, the whole body is elevated from the ground, and projected, as it were, into the air, where it remains without any support for a certain time, which is longer or shorter according to the force of projection. It is performed by a sudden extension of the lower limbs, which are previously bent to the greatest degree. The tibiae are carried forwards on the feet by the flexors of the ankle, so that the heels project in an acute angle; the knees are advanced, and the thighs inclined backwards; the pelvis and trunk are bent forwards on the thighs. By this bent state of the ankle, knee, and hip, the whole body is shortened as much as possible. The leap is performed by a sudden extension of all these articulations, by the muscles of the calf, tibialis posticus, peronei, and flexors of the toes in the ankle, by the rectus, vasti and cruralis in the knee, by the gluteus magnus, biceps, semimembranosus, semitendinosus, gracilis in the hip. The impulse produced by this extension is communicated to the centre of gravity of the body, and urges it in a direction more or less opposed to its own weight: all the motion must take place in this direction, as the other end of the extremities rests on the immoveable earth. The extent of the leap must depend on the proportionate length of the bones, and the power of the muscles. Its direction is influenced by the position of the centre of gravity in relation to the limb, from which the impulse is derived; consequently, the human subject can leap vertically, as its trunk is placed perpendicularly over the lower limbs; it can, moreover, throw the body forwards, by making



## MUSCLE.

making the chief exertion in extending the thigh, or backwards, by employing chiefly the extension of the leg.

*Running* is a succession of low jumps performed alternately by each leg. It differs from walking in the circumstances of the body being projected at each step, and the hind foot being elevated before the advanced one is fixed. It is more rapid than the quickest walking, because the velocity is preserved and augmented at each step by the newly produced quantity: consequently, we cannot stop suddenly in running, as in walking. This velocity favours jumping forwards, as it adds to the force, which the jump itself produces in that direction; but it injures, or even entirely impedes, a vertical leap. The body and arms are inclined forwards, that the centre of gravity may be in the most favourable position for its propulsion by the hind leg: hence the latter must be quickly carried forwards to prevent falling. Even in walking, where the motions are performed slowly, and the trunk is nearly vertical, the centre of gravity is advanced at the time that the hind leg should be carried forwards, and a fall is produced by any obstacle which prevents the latter motion. In running, however, the smallest obstacle, which retards the advance of the foot in the slightest degree, brings the trunk instantly to the ground.

In *climbing* objects are seized by the extremities, which are thus rendered fixed points to which the trunk can be moved by means of the muscles, which pass between it and the limbs, as the pectorales, latissimus dorsi, &c. The existence of long and separate fingers, and of thumbs capable of being opposed to the fingers, favours the holding of any bodies, and consequently facilitates climbing. These conditions exist in a very favourable degree in the hands of man; but he is a bad climber because he has no prehensile power in the feet.

In *swimming* the body is moved forwards by a sudden extension of the previously bent limbs; but the motion imparted to the body is not equal to that produced in walking, &c. because the ends of the limbs, instead of resting on a solid surface, are opposed by the fluid, which is itself easily moved. The impulse, therefore, partly throws the water into motion, and partly propels the trunk. The lower limbs urge the body forwards, and the upper support the head and shoulders. The weight of the latter parts is so great in man, that more exertion of the arms is required in him than in any animal; and he is almost the only instance in which swimming cannot be performed naturally.

There are many other motions, the description of which would lead us into interesting and instructive, but too long details: the preceding will serve as a specimen, and enable the reader to develop the powers employed on other occasions. We have only a few remarks to add on the subject.

The moving powers of the human frame are able to produce much more numerous and diversified effects than what are exhibited to our observation under ordinary circumstances. These dormant capabilities, when excited by necessity, astonish and may instruct us. Persons born without hands are often able, with the stumps, by which their limbs are terminated, to execute the numerous offices, and even those requiring the greatest exactness and delicacy, which are ordinarily performed by the fingers. Others can do with their feet, what is commonly executed by the hands, such as writing, drawing, spinning, &c. &c. The feats of the rope-dancer, the harlequin, the tumbler, and all the varied exertions derived from the lessons of that successful instructor Necessity (*ingenii largitor venter*), do not flow from any properties peculiar to the individuals, but are the offspring of powers common to all, and are chiefly worthy of attention, as exhibiting to us what the body can perform.

They shew us, in a very striking manner, the admirable mechanism by which the equilibrium of the body is maintained; by which so many separate pieces, with the greatest power and facility of relative motion, are constantly adjusted, amidst the most rapid changes, so as to maintain the necessary bearing by which the solidity of the whole is preserved. In all the motions, whether gentle or violent, the actions of the muscles are so regulated, as to prevent any shock: we are unconscious of the exertion by which this is effected, but we are immediately rendered sensible of its importance by what happens when it is omitted. If our step is either shorter or longer than we had calculated upon, if we descend two steps of a stair instead of one, &c. we experience a jar in the whole frame which admonishes us of the wrong calculation.

The effect of education is very striking in this system, both in the force and duration, as well as in the kind of contraction. Practice will enable us to lift a much heavier weight, to bear a greater burthen, to project the body farther in leaping, or advance it more rapidly in running, than we could do on the first trials, and that to a very great extent. It is equally efficacious in enabling us to bear protracted exertion of any kind, as in running, walking, &c. Motions, to which the muscles have not been accustomed, are at first performed difficultly, merely from that cause; we can assign no other reason for the awkwardness of the first attempts at writing, drawing, playing on a musical instrument, or exercising the various mechanical processes of the arts; and in these cases nothing but very long practice will confer facility, although all the powers exist in the first instance.

*Development of the Muscular System of the Animal Life.*—In the first months of foetal existence, it is confounded, with the others, in a homogeneous mucous mass, in which we can hardly trace any line of demarcation. Muscles, aponeuroses, tendons, &c. have all the same appearance. The limits of these different systems are gradually established, and the muscular tissue is rendered evident at first by its assuming a deeper tint. The interior of the bones is redder than the muscles in the foetus, while the difference is just of the opposite kind in the adult. In connection with this circumstance we may remark the inactive state of the muscles before birth; although a few motions announce the presence of the foetus in the uterus in the latter months of pregnancy, these are inconsiderable in number and extent when compared to what will take place afterwards. The bent state of the limbs and body, and the confined space in which they lie, particularly in the latter periods, when the waters of the amnios are so much diminished, account for this want of motion.

The muscles of the chickens in the shell exhibit but slight marks of irritability, either under the action of the more common irritants, or of the galvanic influence. Bichat has ascertained the same circumstance in experiments on guinea-pigs, both when he irritated the muscles directly, or through the medium of the nerves, spinal marrow, or brain: the nearer the animal is to the time of conception, the less effect is produced. During foetal existence also, the muscles lose their irritability very quickly after death: this property remains rather longer immediately before parturition, but its duration is still much less than after birth. In the adult, the nutrition, the bulk and redness of the muscles are in proportion to the motions which they execute: their light colour and slender size correspond very well to their inactivity in the foetus. Can the inactivity of the foetal muscles be at all connected with the black blood that circulates through them at this time?

The



The small size of the foetal muscles is as remarkable as their pale colour: the bulk of the limbs at this time depends chiefly on the subcutaneous stratum of fat. The cavities and processes of bones for muscular attachment are hardly visible.

Some have asserted that the fleshy part is more developed in proportion than the tendinous; but this is not supported by observation. There is the same proportion between these parts as in the adult. The muscles, at the time of birth, undergo the same change as all other organs; red blood is sent to them instead of black. The brain too, which has been hitherto inactive, is excited, and reacts on the organs of motion. All the muscles are exerted, and produce more or less marked agitations of the limbs and motions of the trunk and face, very soon after birth. The circulation of red blood does not, however, suddenly change the colour of these organs: they retain for some time after birth, the lividity which characterised them before, as their colour at all times depends, not on the blood which circulates in their vessels, but on that which is combined with their tissue. Their substance gradually acquires a red tint, and they grow more in proportion than the other parts; but this growth does not affect their thickness, they do not produce those prominences which are so remarkable in the adult.

Many facts prove to us that there is a considerable difference between the muscular substance of young and old animals, although we do not know exactly what that difference is. The flesh of young animals produces a more gelatinous and insipid broth, and has hence been supposed to contain less fibrine. The crisping on exposure to heat is less sensible, &c.

After the growth of the body in length is finished, it still increases in thickness; and this circumstance is particularly observable in the muscles. To the slender figure and rounded outlines of the youth succeed the strong forms and muscular prominences of the man. These organs elevate the skin, and produce risings and depressions of the surface: they are now more strongly marked in the state of rest, than they were before in the greatest exertion of the body. The time at which the genital organs are developed, and the covering of hair is produced on some parts of the body, is that at which the muscles assume this prominence in the male; for no analogous phenomenon occurs in the female; there the outlines of the body preserve their roundness and softness. This increase in the muscles of the adult affects the muscular, and not the tendinous or aponeurotic part. The augmentation of thickness is attended with increased density. A sensible difference may be perceived by the hand, between a muscle of a child and of an adult in contraction; and the latter will support, in the dead subject, heavier weights than the former.

The red colour of the muscles begins to be less bright after the middle period of life. The tint is very variable in the adult. Slow diseases make it tawny or pale: in dropsy, when long continued, this is clearly seen. In general, whatever gradually debilitates the vital powers, has the same effect. Acute diseases affect it but little; nor is it changed in fevers, however marked the prostration of strength may be, if they are quickly fatal. It is affected only by nutrition, the phenomena of which function take place very slowly.

In old age the muscles become hard and tough: they are not easily chewed. They contract slowly; the influence of the brain over them is diminished, and they are soon tired: yet they feel loose and flaccid, when compared to those of the adult. There is a firmness in the latter, which makes them preserve their form, and gives them a resistance to the

feel: this seems to arise from a cohesion of their particles connected with the vital influence, and retained for some time after death. The contractility of tissue is much less in the old than in the young man: in the latter the muscles are firm, and do not move under the skin; there is a flabbiness in the former, and a vacillation is observed in all the great motions.

The colour of the muscular substance, in the old subject, is often converted into a light yellow, so as to give it an appearance like fat: yet ebullition or combustion do not shew the existence of animal oil in such muscles. Those on the back of the spine undergo this change most frequently, which, however, only affects particular muscles, and never the whole system. A nearly analogous appearance is sometimes seen in wasted limbs. In recent paralysis, even to the date of three, four, or six months, there is very little change in the limbs, the colour and bulk of the muscles being preserved: but after a longer time, the absence of motion, and perhaps the want of nervous influence, affect nutrition; the muscles lose their colour, and are contracted in size. But this change is not observed in all cases. Long continued external pressure will cause diminution and change of colour in muscles.

The state of the animal muscular system after death varies considerably. While the body retains its heat, the muscles are soft, as in the state of relaxation during life, and allow the parts to be moved in any direction: they then become rigid, so as to fix the joints, and retain them firmly against any efforts at bending them. This rigidity does not take place invariably, and its absence has been noticed in particular kinds of death; for example, in persons or animals killed suddenly by electricity or lightning, or by a violent blow on the stomach, in malignant fevers, in animals hunted to death, in cases of a sudden and violent shock to the whole system, in asphyxia by deleterious gases, as the carbonic acid, and, according to Dr. Adams, (*On Morbid Poisons*, Prel. Remarks, p. 34.) in death by wounding the medulla spinalis close to the brain. In these cases, too, the blood does not coagulate after death.

Where the muscles become stiff, they present this appearance in every variety of degree. Sometimes, if the subject be placed upright against a wall, the rigidity is so great that it retains its position, and a very great force is required to bend the thigh or leg. Some muscles may be stiff, while others continue soft. Those which have become very rigid are easily torn by forcible flexions; while this rupture cannot be produced, where they remain relaxed, by any motion of the limbs.

The connection between different kinds of death, and their various appearances in the animal muscular system, and the circumstances which attend, produce, or modify the latter, afford an interesting subject of research. Hitherto we possess too few facts for any general conclusions.

Muscular tissue is never accidentally developed in organs, where it does not exist naturally, as the osseous, cartilaginous, and even fibrous systems are. If it were so produced, it must belong to the organic life, because cerebral nerves are necessary to the animal life.

*The muscular System of the organic Life.*—This is not so generally distributed over the body as the preceding, and differs from it also remarkably in forming a much smaller share of the frame. It is concentrated in the chest, where the heart and œsophagus belong to it; in the abdomen, where the alimentary canal is partly formed by it; and in the pelvis, where it composes part of the urinary bladder. Whether the uterus possesses any of this texture is rather a doubtful point. Thus it occupies the middle of the trunk,



is foreign to the limbs, and is removed from the action of external bodies; while the animal system is placed superficially, forms almost the whole bulk of the limbs, and appears in the trunk as much designed to protect the other organs, as to execute the various motions of the animal. No part of the organic muscular system is found in the head.

The muscles of the preceding system have almost universally straight fibres; in this, on the contrary, they are curved, so as to form muscular cavities of various shapes. They are never attached to bones, and have no tendinous fibres: the white threads connected to the fleshy columns of the ventricles of the heart differ from tendons in many respects. The organic is distinguished from the animal muscular system by the circumstance of its fibres not arising from, nor terminating in, fibrous organs: those of the latter are always continuous either with tendons, aponeuroses, or fibrous membranes; the organic come from cellular tissue, and end in that again, after finishing their course. Sometimes the fibres seem to encircle the organ completely; but generally they are interrupted, so as to be connected at the ends with a different tissue from themselves.

The forms of this system can hardly be considered in a general manner: they depend entirely on that of the organs, in the formation of which it concurs. It is never collected into insulated fasciculi, as in the animal life; and, excepting the heart, does not form more than the third, fourth, or even still smaller share of a viscus. The arrangement is generally in thin flat membranous plates, constituting more or less broad strata, and scarcely ever strongly marked fasciculi. The fibres are disposed side by side, and consequently not accumulated in any one spot: though the extent may be considerable, the volume is small. All the fibres of the stomach, intestines, and bladder, would not equal the bulk of the gluteus magnus.

*Organisation.*—This is not so uniform as in the foregoing system: there the varieties affect the form, and not the texture of the organ; here, on the contrary, there are marked differences of texture.

The organic muscular fibres are in general much more slender than the animal, and not collected into such large fasciculi: red in the heart, and whitish in the gastric and urinary organs; the colour, however, varies very much. The direction is never uniform, as in the animal muscles; the fibres decussate in all ways, and the fasciculi intersect each other at every variety of angle, so as to constitute a true net-work of muscle. Hence arises their power of contracting the cavities to which they belong in every direction. They are always short: when, as in the case of the longitudinal fibres of the œsophagus and rectum, they extend through a long course, they are not continuous, but arise and terminate within short spaces, then arise and terminate again, always in the same line. They cannot be compared for length, in any instance, to those of the gracilis or sartorius.

We know their nature no more than we do that of the animal fibres; but they exhibit nearly the same phenomena, on the application of the different re-agents. The crispation (racornissement), which occurs at the instant of ebullition, is the same whether the fibres were previously dilated or contracted. The resistance of the fibres is proportionally greater than in the animal system: the hollow organs are hardly ever ruptured during life by the greatest distention. This phenomenon is seen in the bladder only, and there very rarely.

The quantity of cellular tissue between the fibres is very small: they are connected in the heart, rather by juxta-

position, than by this kind of union. The quantity is rather more considerable in the gastric and urinary organs. The organic fibres are never the seat of anasarcaous effusions; they never pass into the fatty state, which is sometimes seen in the animal muscles; nor do they ever exhibit the yellow colour.

The blood-vessels are numerous: in these, as well as in the exhalants and absorbents, there is nothing peculiar to be observed. The nerves are derived both from the brain and the ganglia: the latter predominate every where, except in the stomach and lungs, where the par vagum is distributed; they are the most numerous in the heart, and exist alone in the intestines; they exceed the nerves derived from the spine at the end of the rectum and in the bladder. The cerebral nerves are interwoven with these, as they enter the organic muscles. The nerves of the ganglia, which enter the organic muscles, are not exclusively distributed to them; they form a net-work closely surrounding and belonging to the arteries. It has even been concluded that the nerves of the heart are entirely lost upon the arteries, and cannot be traced to the muscular substance. (Behrens, Dissert. Cor Nervis carere; in Ludwig's Scriptores Neurolog. minores.) The size of the nerves is, at all events, very much below that of those which are distributed to voluntary muscles.

*Properties. Extensibility.*—Numerous phenomena exemplify this property: in the alimentary canal, distention by the food, or the gases liberated from it; in the bladder, accumulations of urine, &c. It can be brought into exercise very rapidly, and carried to a very great extent. The stomach and intestines pass in a few moments from the contraction of complete emptiness to very great distention, and the urinary bladder can be extended to three or four times its natural size in a short time. The animal muscles are never distended with such rapidity: hence, when the abdomen is opened after death in tympanites, the intestines set at liberty occupy a much larger space than when they were confined by the abdominal muscles. The degree of extensibility in the organic muscles may be estimated, by comparing the empty stomach, which is often not larger than an intestine, to the same organ containing five, six, or eight pints of fluid; the bladder retired behind the pubes, to its condition when it has reached the umbilicus, in consequence of distention, &c. The rapid extension in the organic, and the limited power of increase in the animal muscles, bear an evident relation to the successive order in which the gastric viscera become distended in executing their functions: the stomach is filled, when the intestines are empty; and the latter are distended by the matters discharged from the former, &c.

A different kind of extensibility is observed sometimes in the organic muscles, as in the heart, for example, in aneurism. The left side of the organ has twice or thrice its natural size, and is at the same time proportionally increased in thickness: this is not distention, but preternatural growth. The enlargement of the uterus in pregnancy arises, in the same way, from a greater activity of nutrition.

The *contractility* is in proportion to the extensibility. By virtue of this property, the stomach, intestines, bladder, &c. when empty, contract upon themselves, and are reduced to a small volume. The extremes of distention and contraction are never separated so widely in the animal as in the organic muscles. This power, although not dependent on, is modified by the vital forces. An empty stomach, in a subject who has died suddenly, is very contracted; but this organ is much larger and flaccid, when death has been preceded by a lingering and debilitating disease.



## MUSCLE.

The matters contained in the hollow muscles of the organic life are their antagonists: so long as they are distended by them, the contractility of tissue is not exerted; when this distention ceases, that property is immediately brought into action. The expulsion of these contents is effected by a very different property, *viz.* the organic contractility. The latter is sudden, and consists of a series of contractions and relaxations; the former, slow and gradual, goes on without any alternation of relaxation. When the organic contractility has emptied the hollow muscles, the contractility of tissue reduces their dimensions. This latter property is in proportion to the number of muscular fibres; hence the ventricles will be more contracted, when empty, than the auricles, &c.

*Vital Properties. Animal Sensibility.*—This exists only in a slight degree. In the instance mentioned by Harvey, where a caries of the sternum had exposed the heart, it could be irritated almost without the person being conscious. If the peritoneum be removed from the back of the bladder in a dog, and the muscular stratum irritated, the animal shews very little symptoms of pain. It does not appear that these muscles are the seat of any feeling analogous to the sense of fatigue experienced in those of the animal life.

*Animal contractility* is foreign to the muscles of the organic life. In this property we require an influence in the brain and nerves to set the muscle in action, and an excitation of the brain, by the will, by stimuli, or by sympathy, none of which conditions exist in the present case. Every individual knows that the functions of the organic muscles are not in the slightest degree influenced by his will; that the motions of the heart, or bowels, cannot be suspended, accelerated or retarded by volition, &c. Irritation and compression of the brain, instead of convulsing or paralyzing, have no effect upon these muscles. Circulation is carried on perfectly well in acephalous fœtuses. After the blow which has killed an animal, and rendered his voluntary muscular system motionless, the heart is still agitated for some time, the bladder and rectum expel the urine and fœces, and the stomach sometimes rejects the food. Opium, which deadens the animal life, because it acts particularly on the brain, which is its centre, which paralyzes all the voluntary muscles, does not stop the contractions of the others. The action of wine, and of other narcotics, exhibits analogous phenomena.

The inferences afforded by disease are the same. Depression of the cranium, extravasations on the brain, apoplexy, &c. excite, debilitate, or annihilate the action of the voluntary muscles: but the organic are unaffected. In a paroxysm of mania, or an attack of malignant fever, analogous phenomena may be noticed.

Affections of the head are sometimes attended with vomiting; and the action of the heart is accelerated in cerebral inflammations. These are merely sympathetic phenomena, which may be present or absent, and which are irregular in all respects; while the contraction of the animal muscles from affection of the brain is a constant and invariable occurrence.

On the other hand, affections of the organic muscles do not influence the brain; that organ is not deranged in vomiting, diarrhoea, palpitation of the heart, &c. In syncope the brain is influenced, because the heart's action is entirely stopped: it no longer sends blood to the brain, nor excites it by the motion imparted to the basis.

Irritation or division of the branches, which the eighth pair sends to the heart, does not affect its motions. Division of both trunks is indeed fatal at the end of some days; every

thing shews the existence of great disturbance in the pulmonary functions, so that the circulation seems to be affected indirectly.

The division of one nerve does not ordinarily interrupt the functions of the stomach; while the section of both causes very great disturbance. It produces vomiting, which continues for the two or three days during which the animal survives the experiment. This result affords a striking contrast to the sudden immobility of an animal muscle, consequent on dividing its nerve. Irritation of the par vagum causes contraction of the stomach.

The bladder and rectum approach more nearly to the voluntary muscles, in their relations to the brain, than the stomach and heart. Falls on the sacrum, producing concussion of the lower part of the medulla spinalis, paralyze the bladder as well as the lower limbs, and thus cause retention of urine. Yet the bladder is so much assisted by several voluntary muscles, that the phenomenon may arise partly from the effects of the accident on them. For irritation of the lower part of the medulla spinalis, which throws all the muscles of the lower limbs into convulsions, has no effect on the bladder; and the involuntary jets of urine produced by violent pain in animals, are caused by contraction of the abdominal muscles. If the bladder be ever so full when the abdomen is opened, the urine will not be expelled. Hence, although the bladder may be regarded as a voluntary muscle, so far as its nerves, derived from the sacral plexus, are concerned, it is brought under the action of the will chiefly through other organs, of which the action is accessory but essential to its functions.

In the rectum, while the contained matter is in small quantity, the sensible organic contractility is not sufficiently excited to expel it: the action of the surrounding voluntary muscles is required. When the fœces are collected in larger quantity, they produce an irritation which ends at last in the voluntary evacuation of the gut.

Thus it appears, that the bladder and rectum, although they receive nerves from the brain, are less influenced by that organ than we should suppose on the first view. They cannot be deemed, as some have called them, mixed muscles; and there is reason to doubt, whether, if no accessory power acted on and compressed them, we could ever produce voluntary contraction of them through the nerves derived from the sacral plexus. Bichat says that he never saw an animal void his excrements after the abdomen had been laid open.

We may conclude that the cerebral nerves going to organic muscles, have over them an influence, which does not at all resemble that of such nerves distributed to the animal muscles. The nature of this influence seems at present to be unknown.

Cutting, tying, or irritating any of the nerves coming from ganglia to organic muscles, or the ganglia themselves, does not affect the contractions of the muscles. Bichat tried galvanism with this view, but found it as inefficacious as all other irritants.

The nature, therefore, of the cerebral and nervous influence on the organic muscles is unknown to us: it is quite different from the effects produced in the animal muscles.

The *organic sensibility* is very strongly marked in this system; and its exercise must precede that of the sensible organic contractility.

*Insensible organic contractility*, or tonicity, exists in the muscular system, to the degree necessary for its nutrition; but there is nothing peculiar to be observed concerning it.

The leading property, however, on which almost all the functions rest, as those of the animal muscular system do upon the animal contractility, is the *sensible organic contractility*.



*lity.* This property, for the illustration of which physiology is so much indebted to Haller, may be considered under three points of view: 1, in the exciting causes; 2, in the organs; and 3, in their mutual action.

I. The exciting causes are either natural or artificial. The former act constantly during life: the organic phenomena partly depend on them: they set in action the muscles, which would otherwise remain motionless. The others are applied for the most part only in experiments.

1. The natural stimuli are, the blood for the heart, urine for the bladder, aliment and excrement for the gastric organs. Some substance is habitually in contact with every organic muscle, and keeps up its motions; as the animal muscles, connected with the brain, derive from it the principle of their movements. So long as these stimuli continue the same, they maintain their respective organs in the same aptitude for motion. If the organs are in the same state, the pulse, the digestive periods, the intervals of the urinary excretions are uniform, while the blood, chyle, and urine are unchanged. But, as these substances vary almost infinitely, the motions of the organs undergo frequent changes. When the chyle enters the sanguiferous system in digestion, the pulse is changed: analogous changes occur from absorption of pus, from injection of fluids into the veins, from the inflammatory affection of the blood, &c. The only obvious way of explaining these phenomena is by an alteration of the mode of action of the heart, produced by the change of stimulus.

The influence of the degeneration of the fluids may have been exaggerated, and pathologists may have placed in this class of causes too frequent a source of morbid changes. Yet we cannot deny that fluids may impart a different excitation to the solids, according to the changes which they undergo. In the same individual, and with the same quantity of food, the duration of digestion varies according to the quality; some kinds pass quickly, others are retained. As the urine differs in its properties, the bladder holds it for a longer or shorter time. How variable are the effects of different emetics and evacuants on the intestinal tube. The quantity of fluid contained in an organic muscle has, too, a decided influence on its contractility. The heart's action is accelerated, when the mass of blood is augmented by transfusion; or when it is returned rapidly upon the heart from all quarters, in consequence of strong muscular exertion, as in running. The quantity of urine and feces is an important circumstance in determining involuntary contraction of the bladder and rectum. A single glass of warm water will not excite vomiting, when three or four will have the effect with certainty.

2. In the class of artificial stimuli may be included all the substances in nature. That a muscle in contact with a body, to which it is not habituated, should immediately contract, belongs to the very essence of organic contractility. The contact of the surrounding organs has no influence of this kind; perhaps habit has deadened the feeling: but, if they are removed from the body and cooled, and then applied to the organic muscles, they cause contraction. Heat or cold, air, and all kinds of liquids, excite the organic muscles.

These artificial stimuli act in various ways: 1, by simple contact. In this view, fluids are more efficacious than solids, as they stimulate more points. Solids operate according to their extent of surface, their hardness, the pressure they produce, &c. Nature almost always employs fluids as stimuli in the natural state. 2. Laceration is more effectual than mere contact. When a touch with the scalpel has no effect, puncturing with its point excites the organ forcibly. 3. Chemical excitation is in general the most powerful. But here

we must distinguish between crispation and irritability. A strong or concentrated acid disorganises the part entirely; a very diluted one causes alternate contraction and dilatation, leaving the texture uninjured: the former is a chemical, the latter a vital phenomenon. There is every intermediate degree of effect between these two extremes: but we cannot establish a rigorous limit between the racornissement and the irritability. 4. There are stimuli, the mode of action of which is entirely unknown; as electricity.

II. The sensible organic contractility, considered in the organs, presents numerous varieties, according to the diversity of tissue, age, sex, temperament, &c.

The animal contractility is uniform in the voluntary muscles, because the organisation is uniform: in this system the varieties of structure determine corresponding varieties in the properties. There is a relation between each organic muscle and the fluid which commonly excites it. The blood alone maintains regularly the motions of the heart: foreign substances introduced by the veins disturb the contractions. The urine, which excites naturally the motions of the bladder, would cause trouble in those of the heart; while the blood will produce convulsive motions of the bladder. These, and the numerous other phenomena of the same description, are connected with the different sensibilities of the mucous membranes (see MEMBRANE); they prove that every muscle has a degree of organic contractility peculiar to itself, and excited into action in a natural way, exclusively by some particular fluid.

We arrive at the same result with respect to extraneous substances: an emetic, which causes contraction of the stomach, may be introduced with impunity into the bladder: purgatives do not cause vomiting, &c. This relation of certain substances to the sensible organic contractility of particular organs is apparent, both when they are directly applied to the corresponding mucous surfaces, or when conveyed by the circulation; as in the injection of different substances into the veins. Although the emetic or purgative in the latter case is presented to all the organs, the stomach or intestines alone contract. They have the same effect when introduced into the body by cutaneous absorption.

Age modifies very remarkably the sensible organic contractility. It is easily excited in infancy. The urinary bladder retains its contents only for a short time; the heart contracts with a rapidity, of which the pulse affords a criterion; all the digestive phenomena go on faster, so that hunger returns more quickly. This susceptibility of the organic muscles is constantly diminished after the period of infancy, and this change is evinced by the pulse, the length of time occupied in digestion, and the retention of the urine. The action of the organic muscles is weakened in the old man: the bladder and rectum particularly prove this, and hence the retentions of urine, and the accumulations of feces, so common at this age. The functions of the stomach, and of the rest of the intestinal canal, do not languish so soon. The heart holds out the longest: it is the ultimum moriens, as it was the first in exercise: its pulsations are the exact measure of the duration of the organic life.

Temperament is another source of considerable modifications in this property: the pulse and the digestive phenomena are quick in some, slow in others, &c. The variations in the force of the organic do not coincide with those of the animal muscles; the one may be weak when the other is strong; the heart, however, more frequently bears a relation in point of strength to the external muscles, than the stomach, intestines, or bladder. A full and strong pulse generally coincides with an athletic constitution; and these are frequently joined to a weak gastric system; while, on the con-



trary, strong gastric organs are often joined to external weakness.

The variations of strength in this system are partial: one part predominates over the rest: the heart, the stomach, or the bladder may take the lead. Sometimes all the gastric viscera are not at the same level of strength: the stomach may be weak while the intestines have their natural strength, and *vice versa*. In the animal system, the varieties are general: we may strengthen this or that region by exercise; but the natural differences of force affect the whole. This difference appears to arise from the circumstance that the contractility of the animal muscular system is derived from a common centre, the brain; while that of the organic has its principle insulated in each organ.

Women approach to children in the characters of their sensible organic contractility: the movements are weaker and more rapidly executed in this sex.

These observations on the different degrees of irritability, are not applicable to the organic muscles exclusively; they apply also to those of the animal life, and to the animal contractility of that system, as well as to the sensible organic contractility. We may observe, in general, that the same stimulus, applied in the same manner and extent, will produce different effects on different muscular organs; that it will even affect them differently in the same individual at different times. They are more easily excited after a great prostration of strength, loss of blood, violent action of purgative remedies, &c. There seems to be a natural difference in the degree of these powers, so that of individuals of the same general appearance, some are much more irritable than others.

III. We have considered separately the stimulus and the organ stimulated: the exercise of the sensible organic contractility takes place when they are brought together. We no more know what happens on this occasion, than what takes place when a body attracts another, when an acid combines with an alkali, &c. In attraction, affinity, and irritability, we can only pursue the phenomena to the action of bodies on each other: this action is the term of our researches.

The action is in no case direct: an intermediate tissue, which receives the irritation, is always interposed between the stimulus and the organ acted on. This is a very fine membrane in the heart; a mucous surface in the gastric viscera and the bladder. We even find that this intermediate organ is more susceptible of excitation than the muscle itself. More lively contractions of the heart are produced by irritating the internal surface of the cavities, than by stimulating the muscular substance, after exposing it by removing the serous membranes. Irritation of the serous surfaces also excites the organic muscles. An altered state of the medium changes the effects produced by stimuli, as diseases most abundantly evince. The action of a stimulus, too, extends to fibres, which cannot be affected even through the intermediate organ: by irritating a small spot of the intestine, the canal will often be thrown into contraction for a considerable length.

The existence of this intermediate organ constitutes a striking difference between the sensible and insensible organic contractilities. The same system in the latter receives the impression and reacts: in the former, one system is impressed or perceives, and another moves. The last is more analogous to the case of the animal life, where the organs of the senses and of motion, totally different, are also widely separated from each other.

This property continues much longer after death than the animal contractility. The internal organs may still be ex-

cited to contraction, when irritation of the medulla spinalis has no effect on the external muscles. This fact is so familiarly known, and the experiments in proof of it have been so multiplied, that it seems no longer necessary to enter into a detailed proof of what no person contests. To this permanence are owing the evacuation of the feces and urine after death, and the expulsion of the contents of the stomach, which are often driven into the mouth. In sudden deaths, produced either by violent injury of the brain, as in apoplexy, concussion, compression, or by an affection of the heart, as in syncope, the bursting of an aneurism, &c. or by cessation of the action of the lungs, as in asphyxia, the permanence of this contractility is very remarkable: general death occurs first, and the organs then die partially, each vital force being in a manner extinguished successively. In all slow deaths, particularly where a debilitating disease has preceded, each vital force is gradually weakened, and the partial death of every organ comes before the general death. When the latter happens, therefore, none of the particular organs retain their life. Bichat states, that in dogs, killed by hunger, the contractility was extinguished at the time of death, and that in feral, who died of a debilitating epidemic complaint, the same circumstance was observed.

*Sympathies.*—No organs are more easily influenced by others, than the organic muscles: but all are not equally susceptible. The heart holds the first rank; then come the stomach, the intestines, and lastly, the bladder.

The action of the heart is suddenly changed by every affection, which is at all decided, in the animal economy: a very slight wound or pain is often sufficient to produce this effect. Sometimes the action is stopped for a moment, and hence results fainting, which is a common effect of sudden and violent pain. More frequently it is accelerated; and hence the febrile attacks common in all local affections: they are merely sympathetic, and cease when the local cause is removed. We cannot deny that this accelerated action may depend on a foreign substance mixed with the blood, and rendering it more irritating, or that it may arise from an affection of the substance of the organ, causing it to be more irritable: yet certainly it is often purely sympathetic, or derived from that unknown relation, which connects together all our organs, from that consent (*consensus partium*), which unites all their actions, and brings them into a state of reciprocal dependence.

Sympathetic affection of the stomach is not so common as that of the heart. Inflammations are often accompanied by vomiting; and several fevers have this symptom at their outset. It does not arise from bile being introduced into the stomach; for that fluid is found naturally in the empty stomach; nor does it arise from unhealthy secretions of the mucous coat, for they frequently do not exist. If there are such secretions, or if bile be contained in the stomach, they are rejected by the act of vomiting. How, it will be asked, does the stomach come into action in consequence of the lung, the pleura, or the skin being affected? By sympathy; that is the convenient word under which we shelter our real ignorance of the mutual relations of our organs. The vomiting is an effect analogous to the augmented action of the heart in fevers, or to the disturbance of the brain that causes delirium. These phenomena shew that other organs, somehow or other, feel the state of that which is disturbed.

The bladder is the organic muscle least frequently affected by sympathy. In fevers there is sometimes a paralysis, lasting for a short time, and producing retention: incontinence occurs less frequently.

The sensible contractility is very active in this system. Indeed, the organic muscles are constantly in action; and they are



## MUSCLE.

are very easily influenced by other organs. This is the vital property deranged in such cases: the insensible contractility, which does not perform an essential part in the phenomena of these organs, is seldom affected. Disease generally affects the prevailing vital power of any part; as the animal contractility, for instance, in the system last described. The insensible contractility, or tonic, existing only to the degree necessary for nutrition, is very seldom influenced: that function is therefore uniform, and consequently alterations of the muscular tissue are rare, and seem to be produced, when they do occur, rather by communication from the mucous surface, as in cancers. In systems where the insensible contractility is constantly exerted, as in the cutaneous, serous, mucous, and glandular, where it presides over the functions of nutrition, exhalation, and secretion, that property is altered in diseases. Hence all the changes of tissue, which are properly enough called organic diseases, are as common in these systems, as they are rare in those where the insensible contractility exists only in the degree necessary for nutrition. The unfrequency of acute inflammation in the muscular systems, and its very common occurrence in the cutaneous, serous, mucous, &c. must be explained on the same principle. We hardly ever find the muscular tissue of the heart inflamed. Inflammation of the serous and mucous membranes of the alimentary canal is very common; we know nothing of this affection in the muscular fibres.

*Organic muscular System considered in Action.*—The force of the contraction is never raised to the pitch which that of the animal muscles sometimes attains. Between the strongest and the weakest pulse, or jet of urine, there is nothing even approaching to the difference between the languor of the voluntary muscles in some women, and their energy in a maniac, or a man enraged. The heart and the deltoid are nearly equal in volume. What would become of the circulation, if the former should ever exert, in expelling the blood, the force which the latter often displays in elevating the arm. The organic muscles, on the contrary, are never exposed to the prostrations of strength so common in the voluntary; they are not exposed to paralysis, because they are not under the influence of the brain. The irregular agitations of the heart, producing so many varieties of the pulse in acute fevers, bear some resemblance to convulsions.

The force produced by the contraction of these muscles, is not subject to the diminutions which affect that of the voluntary muscles: it is all exerted in accomplishing the object, and consequently does not admit of the distinction into absolute and effective, which is essential in the other case. According as the body to be expelled from a hollow muscle is solid or fluid, a greater or less contractile energy is required. Hence the longitudinal muscular fibres are more strongly pronounced in the large, than in the small intestine, and in the rectum than in the colon. Hence the slightest effort is sufficient to expel the fluid matter of diarrhoea; while the strongest exertion of the respiratory powers is necessary in aid of the fibres of the rectum, to get rid of hardened feces.

The force of the organic muscles is much greater in the vital phenomena than in our experiments: when the heart is exposed, its motions become weak and irregular. There is no comparison between the contraction, which throws a jet of blood seven or eight feet from the carotid, and that which stimuli produce in the heart taken out of the body. In every individual this force varies from a thousand causes; exercise, repose, a tranquil or disturbed state of the mind, sleep, &c. &c. modify it incessantly. Perhaps we hardly digest twice in the same period; retain the urine for the same length of

time, or expel it with the same force. Hence all calculations must be very uncertain.

The force of the organic muscles often remains at the same pitch, or is even augmented, while a general debility affects the animal muscular system. A strong pulse, vomiting, diarrhoea, &c. frequently coincide with prostration of strength in diseases.

The velocity of the contraction varies very much; it is very great in experiments with strong stimuli, but much less considerable in the natural state. We might almost say that it is in an inverse ratio to the strength. The contractions become much quicker in several diseases, and here this state is not joined with strength. When the force of the heart is increased, there is generally a little additional velocity; but a diminution of strength often coincides with increased quickness, or the latter is augmented, the former remaining the same. The highest degrees of strength and quickness are perhaps hardly ever united.

In each individual there is probably a certain natural and peculiar rate of velocity. In two examples of the same fever, with the same symptoms, and the same general degree of disturbance, there will be considerable difference in the quickness of the pulse.

Every organic muscle has its own peculiar velocity: the heart, stomach, intestines, and bladder differ from each other most widely in this respect.

The organic muscles are never permanently contracted like the animal. We see a constant succession of contractions and relaxations in the heart. The contracted state of the stomach and intestines, when empty, arises from the contractility of tissue. The alternation of contractions and relaxations characterises the sensible organic contractility, and distinguishes it from animal contractility, or contractility of tissue.

The phenomena of contraction are the same in this system as in the animal muscles. Some differences, bearing a manifest relation to the functions of the parts, are observable between the heart and the abdominal organic muscles. In the former, as in the voluntary muscles, there is a sudden contraction of the whole, projecting the blood in the execution of the natural functions, and producible by stimuli, while the animal is still alive; and there is an oscillation, agitating all the fibres, but not producing any general movement, not propelling the blood for instance. In the alimentary canal and bladder there is merely a slow, and often obscure motion, which is well enough calculated for propelling the contents of those cavities, but would be altogether unfit for projecting the blood. When this has ceased, no oscillation can be produced by stimuli.

What is the relaxation of the organic muscles? What is the nature of that state, which succeeds contraction, and alternates with it? After the contraction of a voluntary muscle has ceased, it is in a passive state, and is restored to its original condition by the action of its antagonist on the bone to which it is fixed. As there are no antagonists in the organic muscular system, the phenomenon of dilatation must be produced in some other way. Physiologists have generally admitted, as the cause of dilatation, the introduction of a fresh supply into the muscular cavities, to fill the place of what has been expelled by the contraction. Thus a new quantity of blood, and of food, have been regarded as the means of dilatation in the heart and alimentary canal, of which the muscles were supposed to be completely passive in this business. There are some doubts of the correctness of this representation; we have mentioned them in the article **HEART**: the observations are mostly applicable to the alimentary canal as well as to the heart.

*Develop-*



*Development of the organic muscular System.*—The progress of this system in its formation is exactly inverse to that of the preceding. The heart is the first point in which motion can be observed; it forms the punctum saliens of the embryo, when the rest of the frame is merely a homogeneous jelly. The internal muscular parts of the abdomen are discerned later, but they appear before the muscular coverings of the cavity: they contribute, with the liver, to the considerable size of the abdomen at this time. The heart is firm in its tissue, and red, while the fibres of the alimentary canal are soft and pale. The contractions of the heart are very rapid, but its contractility is not so easily excited after death, nor for so long a time in the fœtus, as after birth. The latter observation is applicable also to the fibres of the alimentary canal. The urine remains in the bladder, and the meconium in the large intestines, without exciting any contraction of those organs.

At the time of birth the gastric and urinary organs display an active interior motion: the introduction of food into the stomach, the evacuation of the meconium and urine evince this. The organic muscles grow less in proportion than the others after birth. The predominance of the organic system is however less strongly marked in the fœtus than that of the nervous; the brain has a much greater relative size than the heart.

We have stated that there are two distinct periods in the growth of the animal muscles; one terminating their increase in length, and the other in breadth. The former does not seem equally applicable to the organic muscles; the general stature is already fixed, where the gastric and urinary organs still grow considerably.

In the phenomenon of growth each system seems to have a different limit. The general stature is determined by the bony, animal muscular, fibrous, cartilaginous systems, &c. But this does not at all influence the length of the intestines, the capacity of the stomach, heart, bladder, &c. The glandular, mucous and serous systems are equally independent of the general stature. Its varieties, therefore, affect the limbs much more than the abdomen and chest. The end of growth in height is the end of the increase of the muscles, bones, and their dependencies: the internal viscera still increase, as may be ascertained by comparing them in a man of eighteen and another of thirty or forty years.

The organic muscles are not subject to the irregularities of growth, which are observed in the others: the general stature is sometimes at a stand for several years, and then suddenly increases. We see nothing of this sort in the organic muscles; the regularity of the internal functions, in which these muscles are concerned, is inconsistent with such irregularities, which do not interfere with the business of locomotion.

The organic muscles have acquired their full development about the twenty-sixth year; the chest and abdomen, which contain them, have then arrived at their perfect size. Their density is more considerable, and their colour deeper than in the youth. The colour varies considerably in the heart; but is more uniform in the alimentary canal.

With the advance of age this system is weakened like all the others; yet its action is more durable than that of the animal muscles. When the old man can scarcely move, his pulse and digestion retain much of their vigour. This difference between the two systems is the more remarkable, as the time of activity of the organic is nearly twice as great as that of the animal system; sleep suspends the voluntary motions, leaving the involuntary unaffected. This phenomenon seems to be nearly the same on a large scale, as the

lassitude produced by any particular motion is on a small one; a convulsion of half an hour in length completely exhausts the animal muscles, and leaves the person incapable of moving, while the heart, after being long agitated in a fever, returns to its natural type of contraction. These phenomena of the two systems prove manifestly that that of the animal life is fatigued much the soonest; and hence arise the intermissions of its action. We cannot therefore be surprised at finding that this, although less frequently exercised than the other, should sooner exhaust the powers given to it by nature, and should be sooner extinguished. Life is a great exercise, which gradually consumes the organs of motion, and induces a necessity for their repose; this repose is death. Every moving organ arrives at it sooner or later, according to the different degree of force which it has to expend, and its greater or less disposition to become tired by this exercise.

The organic muscles, however, are gradually weakened. The pulse becomes slower, and digestion languishes; the bladder and the rectum first cease to act; then the intestines are inactive; the stomach, and particularly the heart, die the last. For a long time before death the muscular cohesion is weakened in this, as in the preceding system; the tissue becomes flaccid; the sides of the heart, which support themselves in the young subject, collapse in the old, and analogous phenomena may be observed in the gastric and urinary organs.

The best works on the structure and physiology of muscles are Haller's *Elementa Physiologiæ*, t. iv.: his *Opera Minora*, t. 3. Muys, *Musculorum Artificiosa Fabrica*, 4to. Prochaska, *de Carne Musculari*, Viennæ, 8vo. 1778. Bichat, *Anatomie Générale*, tome iii. Soemmerring, *de Corporis Humani Fabrica*, t. iii. In the last work there is a list of various publications concerning the application of electrical and galvanic agents to the muscles. On the description and actions of muscles, the most important sources of information are Albini, *Historia Musculorum*, 4to. and his *Tabulæ sceleti et Musculorum Corporis Humani*, folio. Haller's *Elementa Physiologiæ*, on many parts of the subject. Winslow's *Exposition Anatomique de la Structure du Corps Humain*. D'Agoty *Essai d'Anatomie en Tableaux imprimés*, qui représentent au naturel tous les Muscles; fol. Paris, 1746. Sandifort *Descriptio Musculorum Hominis*, 4to. L. B. 1781. Barclay on the Muscular Motions of the Human Body. The Anatomical Systems of Soemmerring, Boyer and Bichat. Barthez *Nouvelle Méchanique de l'Homme*. Particular parts of the subject have been illustrated by some writers; the muscles of the face and perineum in the *Tabulæ Posthumæ* of Santorini, the latter also in Camper's *Demonstrations Anatomico-pathologicæ*, lib. ii.; those of the palate by Haase, and the diaphragm by Haller.

MUSCLE, in *Ichthyology*. See MYTILUS.

MUSCLE Bank, in *Geography*, a fishing bank on the E. coast of Newfoundland, at the entrance into Trinity bay or harbour.

MUSCLE Bay. See MOSSEL Bay.—Also, a bay in the straits of Magellan, half-way between Elizabeth's bay and York road; in which is good anchorage with a westerly wind.—Also, a bay called "Messilones," on the coast of Chili or Peru, in South America; five leagues S. by W. from Atacama. See MESSILONES.

MUSCLE Shoals, a name given to a part of Tennessee river in America, extending about 25 miles, distant about 250 miles from its mouth, and so called from the number of soft shell turtles and fresh water clams found there. Here the river spreads to the breadth of two or three miles, and forms a number



a number of islands, rendering the passage difficult. From this place to the Whirl or Suck, where the river branches through the Great Ridge, or Cumberland mountain, is 250 miles; the navigation of which is excellent. From these shoals to the navigable waters of the Consee is a distance of 40 miles, and thence to Mobile bay 350.

**MUSCLES**, in *Agriculture*, a sort of shell-fish which abound on the rocky shores on the borders of the sea in many parts of the island, adhering to the rocks. Where they can be collected in large quantities they may be made use of as an excellent manure, either alone or in the state of compost with earthy substances. They were formerly much employed on the sea coasts of Lancashire, but have lately been much on the decline.

**MUSCO**, in *Geography*, a town of South America, in the viceroyalty of New Granada; 30 miles N. of Santa Fé de Bogota. N. lat.  $5^{\circ} 16'$ . W. long.  $73^{\circ} 30'$ .

**MUSCOIDES**, in *Botany*, a name derived from *Muscus*, a moss, and *ido*, form or aspect, which might seem to authorize the Greek etymology of the former, (see **MUSCI**), if botanists were always attentive to such propriety. Unfortunately they too often tag Latin, or even barbarous, names with this Greek termination, when they wish to compare a plant to any thing already known. Names so constructed are however not allowed at all at present, except for species; by no means for genera. Micheli used the above, for a supposed genus of his own, consisting of such *Jungermannia* as have three, four, or five rows of leaves, including stipulaceous scales; like *J. dilatata*, *tamariscina* and *platyphylla*; but nobody has followed his example, as to the genus or its name; except that the latter may be found occasionally employed by writers, to express the mossy habit of certain plants.

**MUSCONECANK**, in *Geography*, a river of New Jersey in America, which empties into the Delaware, fix miles below Easton.

**MUSCONISI**, or **MIESCONISI**, two small islands in the gulf of Adramytti, near the coast of Natolia; 15 miles S.W. of Adramytti. N. lat.  $39^{\circ} 20'$ . E. long.  $26^{\circ} 44'$ .

**MUSCOVADO**, in *Commerce*, sugar that has been cured in the West Indies, in the manner described under the article **MOLOSSES**, and is the raw material from which the British sugar-bakers chiefly make their loaf, or refined lump. See **SUGAR**.

**MUSCOVITE BIBLE**. See **BIBLE**.

**MUSCOVITE Coinage**. See **COINAGE**.

**MUSCOVITE Glafs**. See **MICA**.

**MUSCOVY**. See **RUSSIA**.

**MUSCULAR**, or **MUSCULOUS**, something that relates to the muscles, or that partakes of the nature of them. See **MUSCLE**.

In which sense we say, muscular fibre, muscular coat, muscular flesh, muscular veins, muscular arteries, &c.

**MUSCULO CUTANEUS**, in *Anatomy*, a muscle belonging to the arm. See **NERVE**.

**MUSCULUS Fascia Lata**. See **MEMBRANOSUS** and **FASCIA Lata**.

**MUSCULUS Latus**. See **LATUS Musculus**.

**MUSCULUS** is also a name by which some call the common sea muscle, more properly called *mytilus*.

**MUSCULUS**, **WOLFGANG**, in *Biography*, a celebrated German Lutheran divine, was born in 1479. His father, who was a cooper by trade, perceiving in his son, while very young, an inclination for learning, was desirous of gratifying his wishes, but, being in humble circumstances, he could afford little towards his maintenance at school, and left him to provide his own subsistence, by singing from

door to door, according to the custom of poor scholars at that time. With the aid of what he thus obtained, he was enabled to support himself at different seminaries till he was fifteen years of age. He now set out with the view of visiting his parents, and happening to enter a convent of Benedictines, at the time of evening service, he particularly struck the superior by the excellence of his singing, and the comeliness of his person. He accordingly offered the youth an admission into the convent free of all expence, and promised likewise that he would furnish him from his own purse with clothes and other necessaries. Musculus instantly, with the permission of his parents, accepted the offer, and having taken the monastic habit, spent thirty-three years of his life diligently employed in study, and a shining example to the community of regularity, temperance, and obedience to the duties of the cloister. His first object was the attainment of classical learning, in which, and in the other departments of the belles lettres, he made great progress. At the age of twenty he devoted himself most assiduously to the study of theology, sacred criticism, and the scriptures. Thus furnished, he entered the pulpit, and obtained a high reputation as an eloquent preacher. About the year 1518, he became a convert to the Lutheran doctrines, and zealously advocated the opinions of the great reformer; hence he obtained the name of the "Lutheran Monk." On account of his zeal in the cause of the truth, he would have drawn upon him the heaviest punishments, had he not been protected by Richard à Rottenburg, governor of the castle of Lutzelstein, and the patron of the convent, who was a person of great weight and authority in the Palatinate. In 1527, he was elected prior of the convent, but he refused the honour, and soon after, to free himself from the danger to which he felt he was exposed, quitted the house in which he had lived so long, and went to Strasburg. He almost immediately married, and for his support bound himself to a weaver, in order to learn his business, but a fondness for disputation dissolved the connection between Musculus and the weaver, and he had now no other prospect left, but that of gaining his livelihood by joining the labourers who were employed in repairing the fortifications of Strasburg: upon this drudgery he had prepared to enter; but on the evening before he was to commence the labour, he received a message to meet Martin Bucer, who intimated to him that the magistrates of the city designed that he should preach every Sunday at the village of Dorlisheim. He was delighted with the prospect before him, and became earnestly attached to the duties of his profession. At this period he was entertained in Bucer's house, who gave him his board as an equivalent for his assistance in transcribing his MSS. for the press. After a residence here of a few months, he went to Dorlisheim, where he continued twelve months, zealously employed in the duties of the gospel ministry, and sustaining the rigours of extreme poverty with the most admirable constancy. He had no household furniture, but a little bed brought by him from his convent, which was occupied by his wife during her confinement, while he himself was contented with straw on the bare ground, and a few utensils which the humanity of his parishioners supplied him with. To such great distress was he, at one time, reduced, that he must have perished for want, had not the magistrates of Strasburg ordered him small sums of money from their public treasury. At the end of the year he became deacon-minister of the principal church of Strasburg; and in 1531 he removed to Augsburg, where he at first officiated as minister in the church of the Holy Cross, and afterwards in that of the Holy Virgin. He was for some years involved in continual disputes either with the Papists or Anabaptists.



He successfully resisted the cruel design of putting the latter to death, and was the instrument of reclaiming, by the forcible weapon of reason and argument, several of the deluded followers of Muncr. He retained his situation at Augsbuurg till the year 1547, and during this period he made himself master of the Greek and Hebrew languages, to which he had been before a stranger. He gave evidence of his skill in these languages by the publication of various well-executed translations, particularly of the commentaries of Chrysostom, on the epistles of St. Paul; some of the works of Basil, Athanasius, St. Cyril, Eusebius, Socrates, Theodoret, and others. In the years 1540 and 1541, he was deputed by the senate to attend the conferences held between the Protestant and Catholic divines during the diets of Worms and Ratibon; and in the conference during the latter diet, between Melancthon and Eckius, he was appointed one of the secretaries, and drew up the acts of it. When Charles V. came to Augsbuurg, in 1547, to hold a diet, after the defeat of the league of Smalkalde, Musculus was deprived of his church, but he still maintained the privilege of preaching the tenets of the reformed religion, though it was often at the hazard of his life. He afterwards preached decidedly against the INTERIM (which see); but as the magistrates of Augsbuurg chose to submit to it, he thought it prudent to withdraw to Switzerland, and occasionally officiated as preacher at Constance, St. Gall, and Zurich. While he was at the last-named place, he was invited to England by archbishop Cranmer, but the ill health of his wife, and the largeness of his family, consisting of eight children, led him to decline the prelate's offer. In 1549, he became professor of divinity in the university of Berne, the duties of which office he discharged with great reputation for more than fourteen years. In 1552, when Augsbuurg had recovered its liberty, he was recalled, and about the same time he had invitations from Straßburg, the electors palatine Otho-Henry, and Frederic, and the landgrave of Hesse, to posts of honour and emolument, but his gratitude to Berne was so great, for affording him an asylum in the hour of his distress, that he refused, without hesitation, the advantageous proposals made to him. He died in 1563, at about the age of sixty-six. His works were chiefly theological, and they gave him a high character among the Protestants of his day. Moreri. Bayle.

MUSCULUS, in *Zoology*, broad-nosed whale, a species of *Balæna*; which see. This has a double pipe on the forehead, and a very broad under jaw. It is the balæna, with three fins, a round snout, and wrinkled belly of Ray. The musculus inhabits the Scottish seas: it is sometimes 78 feet long, and above 35 in circumference. The lower jaw is semicircularly turned at its extremity, and is much broader than the upper jaw, which ends in a sharp snout: the opening of the mouth is enormous, and contains a number of laminae of black whale-bone, but the longest do not exceed three feet: the spiracle, or blowing-pipe, is of a pyramidal form, divided into two orifices by a septum, or partition, and is situated on the forehead: the back is black, and is furnished with a soft rayless fin; and the belly, which is white, has a number of folds of the skin. This whale is very destructive to the shoals of herrings which visit the Scottish coast, and which, with proper exertion, might prove an immense source of wealth and industry to Britain. From long experience the Norwegians are so thoroughly convinced of the benefits derived to their fisheries, by the whales' driving the fish into the creeks and firths on their coast, that they are protected by the law, under severe penalties.

MUSCULUS, among the Romans, a military machine, un-

der cover of which the soldiers approached and undermined the walls of places besieged, or filled the ditches.

MUSCUS, in *Botany*. See MUSCI.

MUSCUS, in *Natural History*, a name given to several species of zoophytes. (See MILLEPORA, SPONGIA, FLUSTRA, TUBULARIA, CORALLINA, SERTULARIA.) Marfigli has described several of these marine substances, under the erroneous denomination of sea-plants. See CORALLINE.

MUSDEREE, in *Geography*, a town of Hindoostan, in Bahar; 16 miles S.W. of Rotalgur.

MUSEAU, in *Natural History*, a term applied by M. de Reaumur to a sort of bladder, which the insects of the fly class are provided with, to make their way out of the shell, after their last transformation into the nymph state.

The word is French, and literally signifies a *snout* or *muzzle*.

The flies to whom nature has given this instrument, have it only during that short stage of their lives which is between their being inclosed in the membrane which covers them in the nymph state, and their first flying about at liberty. At this time, in order to their getting out of their shell, nature gives them a power of inflating and swelling out their head to a great size, and throwing out this sort of bladder to its anterior part, by which means the cap of the case or shell is thrown off, and the end of it opened by the two longitudinal lines giving way. The creature, after this, as it has no use for this singular piece of mechanism, has no power to exert it during the remainder of its life. Reaumur, Hist. Inf. vol. iv. p. 340. See TRANSFORMATION.

MUSEBYTER, in *Ichthyology*, a name given by some to the fish called by authors *dobulo*, a German fish, found in several parts of Germany, much approaching to our common dace. See CYPRINUS *Dobula*.

MUSEIA, Μῦσαι, in *Antiquity*, festivals in honour of the Muses at several places of Greece, especially among the Thespians, where solemn games were celebrated every fifth year.

The Macedonians had also a festival in honour of Jupiter and the Muses, which was celebrated with stage-plays and games, and lasted nine days, according to the number of the Muses.

MUSES, Μῦσαι, in *Mythology*, Μοῦσαι, fabulous divinities of the ancient heathens, who were supposed to preside over the arts and sciences.

The word, according to Phornutus, is derived from the Greek, μῦσθαι, which signifies the same with ζητεῖν, to search: others derive it from ομοιωσις, *similar*, or *alike*; all the sciences being bound and united together. Eusebius derives it from μῦναι, to initiate, to instruct; Plato and Scaliger from μαιωσθαι, *obstetricare*; because to them is attributed the invention of arts; and by them arts were produced. Diodorus derives the name from *misin*, which signifies to teach things sublime. Huetius deduces it from Moses. Lastly, Heinsius and Vossius derive it from the Hebrew מוֹשֶׁה, *muschar*, *science*, *disciplina*. The Muses are called by various names: Camænæ, Heliconiades, Parnassides, Aonides, Citheriades, Pierides, Pegasides, Aganippides, Thespiades, Libethrides, and Castalides.

They were called Camænæ from *Cano*, as their principal employment was to celebrate the actions of the gods and heroes: Heliconiades from *Helicon*, a mountain in Bœotia; Parnassides from mount *Parnassus*, in Phocis, which they much frequented; Aonides from the Aonian mountain in Bœotia; Citheriades from mount *Citheron*; Pierides, or Pieræ, from mount *Pierus*; or the name of a city, or from that part of Macedonia called *Pieria*; Pegasides and Hippocrenæ



crenæ from the fountain which Pegasus caused to spring out of the earth with a blow of his foot; and from the same fountain they were called Aganippides: Thespiades from a town in Bœotia, called Thespia; and Libethrides from Libethra, the city where Orpheus was born.

The ancients admitted nine Muses, and made them the daughters of Jupiter and Mnemosyne, or Memory. At first, indeed, their number was but three; viz. Melete, Mneme, and Aœde; Greek words, signifying *meditation*, *memory*, and *singing*: but a certain sculptor of Sicyon, according to Varro, having orders to make three statues of the three Muses for the temple of Apollo, and mistaking his instructions, made three several statues of each Muse: these, however, were found so beautiful, that they were all set up in the temple; and from that time they began to reckon nine Muses; to whom Hesiod afterward gave names; viz. Calliope, Clio, Erato, Thalia, Melpomene, Terpsichore, Euterpe, Polyhymnia, and Urania.

Diodorus Siculus says (l. iv.) that these goddesses, so famous among the Greeks, were fine fingers whom Osiris carried about with him in his conquests, and that he gave to two of his generals, Apollo and Hercules, the name of Musagetes, because they were the conductors of these singers. According to M. Le Clerc they were the nine virgins who formed Jupiter's Royal Academy of Music in Crete. He adds, as a reason why that god passed for the father of the Muses, that he was the first among the Greeks who, in imitation of Jubal, had a regular concert; and that these singing virgins had Mnemosyne, or Memory, for their mother, because she furnishes the subjects of verses and poems.

Each of these was supposed to preside over her respective art; Calliope over heroic poetry; Clio over history; Melpomene over tragedy; Thalia over comedy; Euterpe over wind-music; Urania over astronomy; Terpsichore over the harp; Erato, the lute; Polyhymnia, rhetoric.

They are painted as young, handsome, and modest; agreeably dressed, and crowned with flowers. Their usual abodes were about mount Helicon in Bœotia, and mount Parnassus in Phocis. Their business was to celebrate the victories of the gods, and to inspire and assist the poets; and hence the custom of invoking their aid at the beginning of a poem.

It must not, however, be imagined, that the deities, thus invoked, are considered, even by the ancient poets themselves, as divine persons, from whom they expect any real help. Under the name of Muse they pray for the genius of poetry, and all the talents and circumstances necessary for a happy execution of their undertaking.

Their addresses to the Muses are mere allegories, and manners of expressing themselves poetically: as when they make gods of sleep, of fame, of revenge, and other natural and moral things.

Accordingly, the Muses are of all ages, countries, and even of all religions: there are Christian as well as Heathen Muses; Latin, Greek, English, and French Muses. There are also *new* Muses, who appear every day in favour of those, who, disdainful things too trite and common, choose to strike out of the road.

When Virgil wrote his Eclogues, he invoked the Sicilian Muses, because he imitated Theocritus: and the Sicilian poet having succeeded, the Roman begged for a genius as happy as that of this islander.

The Muses of the poet Lucretius had never inspired any person before him. It is plain, from the doctrine of his book, what kind of divinity it was he invoked. He addresses himself to Venus; but, at the same time, tells us, that none

of the deities trouble themselves with human affairs. His Muses, therefore, must of necessity be mere allegories.

MUSESTRE, in *Geography*, a town of Italy, in the Trevisan; 8 miles E.N.E. of Trevisis.

MUSET, COLIN, in *Biography*, was a simple jongleur or minstrel, whose wit advanced him to the rank of academician of Troyes and Provence. It is believed that the king of Navarre would not suffer him to stroll about the country as a ballad-singer or a piper, but took him into his service.

According to a very ancient tradition, Colin Muset contributed to the expence of building the church of St. Julien des Menetriers, which still subsists in the street of St. Martin at Paris, and that one of the figures in front of that church represents him with a violin in his hand: but this instrument seems so much to resemble a modern violin, that it is suspected to have been added to the building long after.

MUSETTE, in *Instrumental Music*, a bagpipe. It was called by the Latins *tibia utricularis*. This instrument has two pipes on one side, two flutes or two pipes pierced with four or five holes, and on the other nine pipes, which appear fixed in one piece of wood. These pipes are disposed like reeds of the syrinx or Pan's pipe, always diminishing in length. All nations claim this instrument. The Greeks and Romans had it. The Scots and the Irish dispute the title to it, as they do of Ossian's poems.

MUSEUM, ΜΟΥΣΕΙΟΝ, was originally used to signify a palace of Alexandria, which took up, at least, a fourth part of the city; so called, as being destined and set apart to the Muses and the sciences.

Here were lodged and entertained a great number of learned men, who were divided into companies or colleges, according to the sciences or sects of which they were professors. And to each house or college was allotted a handsome revenue. This establishment is attributed to Ptolemy Philadelphus, who here fixed his library.

MUSEUM has hence passed into a general denomination, and is now applied to any place set apart as a repository for things that have some immediate relation to the arts, or to the Muses. See REPOSITORY and CABINET.

MUSEUM, *Account of the progressive History of, in England*.—The first person whom we read of having formed a cabinet of natural and artificial curiosities in England was sir John Tradescant, who lived in the reign of Charles I. This gentleman possessed large physic gardens in Lambeth, and travelled over a considerable portion of the globe with the distinct view of improving himself in natural science, and procuring specimens of whatever appeared rare and curious. The son having imbibed the spirit of his father followed his example, and by their joint exertions, a very valuable collection was framed, which afterwards became the property of Mr. Elias Ashmole, and was comprised in his noble donation to the university of Oxford. Among the more remarkable of the venerable remains of this original cabinet, still preserved in the Ashmolean Museum, is the head of the bird called a Dodo, or Didus, (see DIDUS,) the only one in Europe, and most probably in the world, the species being supposed to be entirely extinct. (See Pennant's Account of London.) The next collection, after that of the Tradescants, appears to have been Dr. Woodward's, which subsequently came to be included in the superb and splendid one of sir Hans Sloane, and, of course, now constitutes a part of the British Museum. About this time the Royal Society seem also to have begun their collection; and shortly afterwards, Mr. Leman, of the



Poultry-Compter, established the first museum of birds preserved in their present manner. About forty years ago Mr. Rackstrow made a fine collection, not only comprising many curious specimens of natural history, but likewise a great variety of anatomical preparations. A few years subsequent, sir Ashton Lever opened his most magnificent cabinet to the public, in Leicester-square, which had cost him upwards of thirty thousand pounds in collecting. This museum for some time was one of the most fashionable places of resort in London; and when disposed of by lottery, became the property of Mr. Parkinson, who erected a building suitable for its reception on the Surrey side of the river Thames, near Blackfriars-bridge, London. The situation, however, was injudiciously chosen, being at too great a distance from the residence of that class of people most likely to afford support to such an institution; and in consequence, the proprietor not meeting with the encouragement he expected, was induced to dispose of the whole by auction, in several thousand lots, in the spring of 1806. Mr. Bullock, of Liverpool, next removed to the metropolis about three years afterwards, and opened his interesting museum of natural history and other curiosities in a large apartment in Piccadilly. That collection, from the very numerous, choice, and beautiful specimens it contained, as well as from the scientific and picturesque manner in which they were arranged, soon attracted universal attention, and excited a predilection for the study of natural history totally unknown in this country before. This success has lately induced Mr. Bullock to erect a magnificent edifice, in the Egyptian style of architecture, near the end of Bond-street in Piccadilly, to which the museum is now transferred, and where it continues to be exhibited with superior advantage, under the liberal and well-merited patronage of a discerning public. The expence of the collection, and the building together, is estimated at 46,000*l.*; and the proprietor, we understand, is still assiduous in augmenting the number of his specimens; so that this museum promises to be a lasting source of gratification and rational instruction to the curious, as well as an ornament to the English metropolis.

**MUSEUM, British.** The basis of this national repository was the extensive collection of the celebrated sir Hans Sloane. After the demise of this indefatigable collector in 1753, his museum was purchased by parliament, who, having, about the same time, obtained full possession of several libraries of MSS. and printed books, to be mentioned hereafter, vested the same, together with a considerable sum for the permanent support of the establishment, in an incorporate body of trustees; conferring on them ample powers to take such measures as should be deemed expedient for the disposal, preservation, and management of the institution, which it was now determined should bear the name of the *British Museum*. The first act of these trustees was to purchase, for the reception of the collections confided to their care, the noble mansion built, about the year 1680, by Ralph, first duke of Montague, who, being at that time ambassador at Paris, sent over the celebrated architect Peter Puget, and other French artists, for erecting and adorning the edifice he had in contemplation. The collections being removed thither, and properly arranged, the museum was opened for inspection in January 1759. Ever since that time, the treasures of this noble repository have been considerably increased, not only by various royal and parliamentary grants, to be mentioned in course, but by many additions made by the trust, and by private donations. Within the last ten years an additional building has been erected, for the reception of ancient sculptures, &c.

The following is a short account of the contents of the thirty-eight rooms, in which the various collections are arranged.

The ground-floor of the old building, consisting of twelve rooms, contains the library. The original library, at the time of the foundation of the museum, comprised the collection of books formed by sir Hans Sloane, and that of major Arthur Edwards, which latter was obtained together with the Cottonian library of MSS. In 1757, king George II. made over to the British Museum the whole of the very choice and important library of printed books and MSS., which had been gradually collected by the sovereigns of these realms, from Henry VII. down to William III., and which also contains the library of archbishop Cranmer, and those of Henry Fitzalan, earl of Arundel, and his son-in-law Richard, lord Lumley, of sir John Morris, and of Isaac Casaubon. This library also contains abundance of old and rare editions, many of them being presentation copies to the sovereigns from their respective authors; and among the MSS., the venerable Alexandrian codex of the Bible. His present majesty made a valuable addition to the library, by a numerous collection of pamphlets and periodical papers, published in the convulsive interval between the years 1640 and 1660. This collection consists of upwards of 30,000 tracts, most of which are now become uncommonly scarce, and many of them probably unique. This department of the museum has also obtained considerable accessions, in the select and valuable libraries bequeathed to it by Thomas Tyrwhit, esq., sir William Musgrave, and especially by the Rev. Mr. Crachode, who ranks among the most generous benefactors of the institution.

The upper story comprehends the saloon and twelve rooms. The first room contains objects of but little importance with regard to scientific information, except the curiosities from the islands of the South sea, the east and west coast of North America, &c. most of which were brought from those parts, and deposited in the museum, by celebrated British circumnavigators.

The second room is at present appropriated to the use of the readers. Persons, not wholly strangers, are freely admitted to this reading-room, and there supplied with whatever books or MSS. they may desire to consult.

With the third room the department of MSS. commences. In it is deposited the Lansdown library of MSS., consisting of 1352 volumes, of which 114 contain an ample collection of lord Burleigh's state papers; 46 volumes of sir Julius Cæsar's papers relative to the time of Elizabeth and James I.; 108 volumes of historical collections of Dr. White Kennet, bishop of Peterborough, &c.

The fourth room contains the Sloanean and Dr. Birch's collections of MSS.; the former consisting of 4100 volumes, principally on physic and natural history; the latter, which was bequeathed to the museum by Dr. Birch, consists of 337 volumes, chiefly on history, biography, divinity, and literature. In this room are also placed Mr. Halhed's Oriental MSS., consisting of 93 volumes, 14 of which are in the Sanscrit language, and the rest chiefly Persian: to which are added some other collections, relative to the same department of literature; such as that of colonel Hamilton, the collection which came with the trophies of our Egyptian expedition, &c.

The fifth and part of the sixth rooms contain the Harleian library of MSS. This library, which, together with the Cottonian collection of MSS., formed part of the original collections of the museum, consists of upwards of



5600 volumes, many of them containing a great number of separate articles, and upwards of 40,000 original rolls, charters, and other instruments, among which there are many of great antiquity; the whole chiefly relating to the political, parliamentary, and ecclesiastical history of Great Britain and Ireland. In the sixth room are also deposited many additions by gift, bequest, and purchase; among which are a valuable collection of Icelandic MSS., presented by Sir Joseph Banks, a collection of autographs, and many other curious articles relative to the art of writing, on papyrus, &c.

The seventh room contains, in 33 presses, the royal library of MSS., presented by King George II., together with the collection of printed books above mentioned. In the remaining 19 presses of this room is deposited the Cottonian library of MSS., collected by Sir Robert Cotton, in the times of Queen Elizabeth and James I., and increased by his son, Sir Thomas Cotton, in the subsequent reign. This collection chiefly abounds in authentic documents, relating to the history, the antiquities, the laws, and constitution of these realms; and also in many ancient and splendid biblical and liturgic volumes, chronicles, and a variety of political tracts; the whole consisting of 861 volumes, of which 54 are so much damaged by a fire, which happened in the year 1731, as to be almost useless. In this room are also deposited, as an addition to the Cottonian library, 94 volumes of extracts, &c. chiefly relating to the exchequer, collected by Thomas Maddox, Esq.; and on the table is the original of the Magna Charta, belonging to the Cottonian library. The original of the articles, preparatory to the signing of the great charter, perfect with the seal, is likewise deposited in this room.

Between the seventh and eighth rooms is the saloon, a magnificent apartment, which, before the erection of the new gallery, contained Sir William Hamilton's collection of Greek vases and other antiquities, but is now destined for the reception of the consolidated mineral collections of the museum. The original inconsiderable mineral collection of Sir Hans Sloane was, in 1798, incorporated with the more perfect one of Mr. Hatchet, which was purchased by the trustees at that period; and soon after, this part of the repository was farther increased by the very useful and elegant collection which formed part of the bequest of the Rev. Mr. Cracherode. These collections, together with some smaller ones, were, and are still partly preserved in the ninth room; but the very extensive and splendid collection of minerals which belonged to the late right honourable Charles Greville, having, in 1810, been purchased by parliament for the British Museum, the trustees pitched on the saloon for the future exhibition of these treasures, which, when the arrangements shall be completed, will, it is supposed, not be surpassed by any other public collection either in utility or splendour.

The ninth room, in which part of the old collection of minerals is still exhibited, will, as soon as the arrangement in the saloon is completed, be fitted up for the reception of rocks and geological specimens in general.

The ninth room contains an instructive collection of petrifications; together with the Cracherodean and the old collection of shells: the latter, though less splendid, is more general and scientific than that bequeathed to the museum by the late Mr. Cracherode.

In the tenth room is deposited the Sloanean collection of insects, some of them rather injured by the tooth of time; and the same may be said of a collection of vegetable substances, preserved in this room. In a far better state of preservation are the mollusca and the numerous zoophytes, and

the insects preserved in spirits. Along the bottom of the tables in this and the preceding room are deposited a great number of volumes, containing dried plants, among which there are several of considerable importance, such as Sir Hans Sloane's Jamaica plants, Kämpfer's herbarium, Buddle's British plants, &c. Very remarkable are also the two fern trees placed over the chimney of this room.

The eleventh room contains the birds and a few mammalia; the former disposed, so far as convenience would admit, according to the Linnæan mode of arrangement. On the tables are preserved the nests and eggs of various birds.

The twelfth room contains a general and extensive collection of fishes, serpents, tortoises, lizards, frogs, &c. as well as many specimens of quadrupeds preserved in spirits.

From this last room, on descending the back staircase, we proceed to the gallery of antiquities, an edifice lately erected, forming a wing on the west side of the main building. The basis of this excellent repository of antiquities was formed by the exquisite collection of Greek and Roman statues, busts, and other sculptured marbles which belonged to the late Charles Townley, Esq. and were purchased by parliament, in 1805, for the sum of 20,000*l*. To these were added the collection of Sir William Hamilton, and several others to be mentioned hereafter, which, together with those articles of antiquity which originally belonged to the museum, constituted an assemblage too considerable and extensive not to demand the additional building, which is now open to the inspection of strangers, as well as for the improvement of artists; an advantage which the students in the fine arts have never before enjoyed in this country.

The first room of the gallery of antiquities contains the terracottas, most of them basso-relievos, symmetrically arranged along the walls; with some statues, among which is the muse Urania, one of the largest statues which have been found of terracotta.—The second room contains Greek and Roman sculptures: the attention of the spectator, on entering the gallery, is particularly arrested by a most exquisite statue of Venus naked to the waist, and covered with drapery from thence downwards; it was found in the maritime baths of Claudius at Ostia. Other striking features of this room are, a statue larger than life of a canephora, being one of the *cariatides* which supported the portico of a temple dedicated to Bacchus; two colossal heads of Hercules, one of them in a very ancient style of Greek sculpture; and two colossal heads of Minerva, one of which is a fine specimen of very early Greek work. The Engravings of the contents of these two first rooms have lately been published.—Among the Greek and Roman sculptures of the third room are several valuable basso-relievos in marble: of the many exquisite statues in this room we mention only the graceful recumbent Diana, and opposite to it the spirited statue of a youth holding with both hands a part of an arm, which he is biting: this statue belonged to a group, originally composed of two boys who had quarrelled at the game of *talus*, as appears by one of those bones called *talæ*, remaining in the hand of the figure which is lost.—The fourth room, equally appropriated to Greek and Roman antiquities, contains only fifteen sculptures, the most striking of which are, a statue of Thalia, found at Ostia, in the maritime baths of the emperor Claudius, and a statue of Diana: both in a peculiar style with regard to the execution of the drapery; and a group of Bacchus and Ampelus.—The fifth room is fitted up after the manner of an ancient sepulchral apartment, or columbarium; in it is deposited a considerable number of cinerary urns and ollæ, bearing monumental inscriptions, and basso-relievos: some niches



in the walls exhibit earthen ollæ, placed in the manner of those which contained the ashes of the slaves, and the inferior orders of the Roman people. In the centre of the floor of this sepulchral room is a Mosaic pavement, lately discovered in digging the foundation for the new buildings at the bank of England.—Among the numerous Greek and Roman sculptures of the sixth room, consisting of basso-relievos, busts, statues, sarcophagi, and other sepulchral monuments, votive altars, &c. may be particularised, a basso-relievo, representing a female bacchante holding with one hand a knife, with the other the hind quarter of a kid; a head of Jupiter Serapis, in which the paint with which the face was anciently covered, is still discernible; a head of Apollo Mufagetes, resembling, in the disposition of the hair, and in the character of the face, the head of a muse; a statue of Libera, holding a thyrsus over her right shoulder, and a bunch of grapes in her left hand, with a panther at her feet; a fragment of a magnificent sarcophagus, representing an elderly man, with a manuscript roll in his hand, a muse standing before him; the front of the cover of another superb sarcophagus, representing a group of cattle, on one side of which is an old faun, and on the other a young faun, both recumbent; a sepulchral cippus richly ornamented on the four sides with festoons of fruit.—The seventh room contains a few Roman antiquities, among which there are four pigs or prismatic masses of lead; one, with the name of the emperor Domitian inscribed upon it, was discovered, under ground, on Hayshaw moor, in the West Riding of Yorkshire; another inscribed with the name of L. Aruconius Verecundus, found at Matlock bank, in Derbyshire; two others, each with the name of the emperor Hadrian inscribed upon it, the one found in the parish of Westbury, ten miles from Salop, the other in Cromford moor, in Derbyshire.—In the eighth room we find, among other highly interesting Egyptian antiquities, two mummies with their respective coffins, in excellent preservation; the one sent to England by Edward Wortley Montagu, esq., and presented to the museum by his majesty; the other found in one of the catacombs at Sakkara, and sent to England, in the year 1722, by Col. William Lethieullier: one of these mummies has been elaborately and beautifully ornamented with coloured beads, the greater part of which still remain; the face of the other mummy is gilt, and the body ornamented with painting; the coffins are made of sycamore wood, and covered with paintings and hieroglyphic figures. There are also deposited in this small room many canopuses, idols in bronze, basalt, marble, porcelain, and wood, scarabei, the skeleton of an ibis, &c.—The Egyptian antiquities contained in the ninth room are principally those which were collected by the French in different parts of Egypt, and came into the possession of the English army, in consequence of the capitulation of Alexandria, in the month of September 1801. They were brought to England in February 1802, under the care of Col. Turner, and were sent, by order of his majesty, to the British Museum. Among the most remarkable of these articles are, the sarcophagus brought from the mosque of saint Athanasius, at Alexandria, being the largest and most valuable monument known to exist of the breccia, called *breccia verde d'Egitto*; and another large sarcophagus of sienite (covered, like the preceding, with hieroglyphics, both within and without), which was brought from Grand Cairo, where it was used as a cistern called “the lover’s fountain;” various figures of Isis and other Egyptian deities; a colossal fist, executed in granite, of enormous dimensions; the celebrated Rosetta-stone, containing three inscriptions of the same import, one in hieroglyphics, another in the ancient vernacular language of Egypt, and another in the Greek language: these in-

scriptions record the services which Ptolemy V. had rendered his country, and were engraved by order of the high priests, when they were assembled at Memphis for the purpose of investing him with the royal prerogatives.—The tenth room contains Greek and Roman sculptures, and most of them of exquisite workmanship. The first which attracts our attention is the Discobolus, who is represented at that precise moment of time which immediately precedes the delivery of the discus; this fine statue is an ancient copy in marble from the celebrated bronze statue, executed by Myro. The torso of a small Venus is one of the greatest ornaments of this room. Among the more remarkable busts is that of an unknown Grecian lady, in the character of Isis; it is gracefully terminated by the flower of the nymphæa lotus, on which it rests, and which having, by some antiquarians, been mistaken for a sun-flower, has given rise to the erroneous idea of a Clythia being represented by this bust. The terminal head of Homer, represented in an advanced age, is equally a masterpiece of Grecian art. Remarkable both on account of their form and their excellent preservation are, an oblong square basin of a fine granite, similar to such as were used in the temples for sacrificial purposes; and a cistern of greenish-black basalt, anciently used as a bath. The latter was formerly in the possession of Christina, queen of Sweden.

On ascending the stairs of the gallery we arrive at the anti-room, in the centre of which is placed the celebrated Barberini vase, which was, for more than two centuries, the principal ornament of the Barberini collection. This vase was purchased of sir Wm. Hamilton, nearly thirty years ago, by the dukes of Portland, since which period it has been more generally known by the name of the Portland vase. It was found, about the middle of the sixteenth century, two miles and a half from Rome, in the road leading to Frascati. At the time of its discovery, the vase was enclosed in a marble sarcophagus within a sepulchral chamber, under the mount called *monte del Grano*. The material of which the vase is formed is glass; the figures which are executed in relief are of a beautiful opaque white, and the ground is of a dark transparent blue. This superb specimen of Greek art was deposited in the British Museum in 1810, by his grace the present duke of Portland.—The first room of this upper story (the eleventh of the gallery) contains the coins and medals, of which more will be said under the article NUMISMATOLOGY. (See also MEDALS.)—The antiquities in the twelfth room are principally those which belonged to the collection of sir William Hamilton, who, during a long residence at Naples, as his majesty’s envoy, had acquired a great number of articles of Greek and Roman antiquity, particularly the largest store then known of ancient vases, vulgarly called Etruscan, the whole of which was purchased, by parliament, for 8400*l.* in order to be deposited in the British Museum. The contents of this twelfth room are a good collection of bronzes, among which there is a raven as large as life, and of most exquisite workmanship; also various specimens of ancient armour, vessels, &c. &c. in bronze; curious specimens of ancient glass, such as cinerary urns, lachrymatories, &c.; various necklaces, ear-rings, armillæ, &c. in gold; engraved gems; fragments in terracotta; a very rich collection of lamps in terracotta; specimens of sculpture in ivory, crystal, agate, &c. and other articles too numerous to be specified, are deposited in the cases of this spacious apartment, which derives particular interest from the great collection of Greek vases above alluded to, the greatest number of which was found in sepulchres, in Magna Grecia.—The thirteenth room is appropriated to the reception of the extensive and valuable collection of prints and drawings, the most



most important part of which was bequeathed by the Rev. C. M. Crachierode.

We now proceed to give a short account of two celebrated national museums in France, viz. the Musée Napoléon, and the Musée d'Histoire Naturelle.

The *Musée Napoléon*, in the Louvre, is a very splendid establishment; it contains above 1000 paintings of the Italian, Flemish, and French schools; a collection of designs of great masters; and above 300 statues and other articles of antiquity. This last department of the museum is particularly remarkable, on account of the many celebrated works of Greek and Roman art which it contains, and which are disposed in six distinct apartments of the gallery of antiquities. The first room is called *Salle des Saisons*, because the ceiling exhibits the seasons painted by Romanelli, and in it are principally deposited the rural divinities, &c. The following are among the more remarkable articles of this room; a young faun with the flute, supposed to be an antique copy of the celebrated faun by Praxiteles, in bronze; the celebrated spinarius or tireur d'épines, in bronze; Venus rising from the bath, with the spurious inscription ΒΟΥΤΥΛΛΗΣ ΕΠΟΙΗΣΕ, in Pentelic marble, formerly preserved in the Museo Pio-Clementino; Amor and Psyche embracing each other, from the Museo Capitolino, in Parian marble; a statue of Ceres, and another of Flora, in Pentelic marble.—The second apartment is entitled *Salle des Hommes illustres*; it is ornamented with eight antique columns of *granitello*, which formerly supported the ceiling of that part of the church at Aix-la-Chapelle, where the tomb of Charlemagne was situated. The principal statues in this room are, that of Demosthenes sitting, formerly in the Museo Pio-Clementino; a sitting figure of Trajan, in the garb of a philosopher, holding a globe in his left hand, also from the Museo Pio-Clementino; Menander and Mordipus, both sitting statues, in Pentelic marble, from the same museum; a standing statue of a Greek philosopher, generally taken for Zeno, in Greek marble (grechetto), formerly preserved in the museum of the Capitol.—The third apartment is *La Salle des Romains*. The paintings of the ceiling, by Romanelli, represent the rape of the Sabine women, Mutius Scævola, and other subjects of Roman history. The articles in this room are all relating to Roman history and manners; the most curious among them are the following; a beautiful head in bronze of Publius Cornelius Scipio the elder, with eyes of silver; a female statue in Parian marble, generally supposed to be Ceres, but which is probably the muse Clio; the drapery of this statue, which was formerly in the museum of the Vatican, is of superior beauty; a Roman matron, with the *palla* or cloak, is one of the best preserved statues we are acquainted with, and remarkable on account of the taste which the artist has displayed in the management of the drapery; the wounded warrior, commonly called the dying gladiator, from the museum of the Capitol; the celebrated Antinous of the Capitol, formerly in the possession of cardinal Alexander Albani.—The fourth apartment bears the title of *Salle de Laocoon*; it is decorated with four large columns of verde antico, which formerly belonged to the mausoleum of the constable Anne de Montmorency, in the church of Montmorency. Besides the celebrated group from which its name is derived, the more remarkable objects in this room are, a Discobolus in a reposing attitude, formerly in the Museo Pio-Clementino; a beautiful statue of an amazon, from the same museum; a most characteristic head of a youthful Bacchus, generally known under the name of Ariadne of the Capitol; a graceful small statue of a priest of the god Mithra, remarkable on account of the taste dis-

played in the drapery, from the museum of the Vatican, where it was known under the name of Paris; the Discobolus from the museum of the Vatican, a copy of the same statue in bronze, by Myro.—The fifth apartment is the *Salle de l'Apollon*; it is ornamented with four columns of a beautiful red granite, two of which were formerly in the church at Aix-la-Chapelle, which contained the tomb of Charlemagne; the floor is inlaid with beautiful and scarce varieties of marble. Among the treasures of this apartment are, the Apollo of Belvedere, and the Venus of Medici (the two most perfect models of the human form ever produced); the Mercury, called the Antinous of Belvedere, and considered as a first rate production of art, worthy of a place near the Apollo; Venus Capitolina; the Venus of Arles, so called from Arles in Provence, where it was found; a beautiful group representing Hercules and his son Telephus, from the Belvedere of the Vatican; the Egyptian Antinous, from the museum of the Capitol; the statue of a Bacchus in a reposing attitude, equally remarkable on account of the excellence of the workmanship, and its high state of preservation; a Bacchus, perfectly naked, carelessly resting with his left arm on the trunk of a tree: this statue, executed in the marble called Greco duro, is not surpassed by any other statue of Bacchus we are acquainted with.—The sixth apartment, called *Salle des Muses*, contains, besides the complete collection of Muses which belonged to pope Pius VI., the busts of various philosophers and poets, who were particularly favoured by these goddesses. The statues of the Muses here preserved, are Clio, sitting, in Pentelic marble; Calliope, sitting as meditating and preparing to write; Melpomene, with her left foot resting on a rock, against which she leans, holding in one hand the dagger, and with the other the heroic mask of Hercules; Polyhymnia, entirely wrapped up in a mantle, in excellent preservation; Erato, in a theatrical garment, with a lyra in her left arm; Terpsichore, with the lyra of tortoise-shell; Thalia, sitting. These seven statues were found in 1774, at Tivoli, in the villa of Cassius, called Pianella di Cassio, together with the statue of Apollo Musagetes; and pope Pius VI. having purchased this beautiful collection for the museum of the Vatican, caused a magnificent saloon to be prepared for their reception. The statues of the two remaining Muses, Euterpe and Urania, which were not among those found at Tivoli, were taken from the palazzo Lancellotti, at Veletri. The Apollo Musagetes, discovered in the Pianella di Cassio, is supposed to be an antique copy of the statue of Apollo Citharæus, by Timarchides, which, according to Pliny, was placed in the portico of Octavia, at Rome, together with the nine Muses by Philiscus, of which those of the Musée Napoléon are perhaps antique copies. Among the busts of illustrious men in this room are those of Hippocrates, of Socrates, Homer, Virgil, and some others, most of them executed in Pentelic marble.

Besides the antiquities and the great collection of paintings and drawings above mentioned, there is still a considerable number of articles not yet incorporated with that part of the museum which is exhibited for public inspection. The collection has also lately been added to by the exquisite articles of antiquity of the Villa-Borghese, among which are the celebrated gladiator, the group of Centaurs, &c.

Another museum at Paris, which is exclusively dedicated to natural history, is the *Musée d'Histoire Naturelle*, known also by the name of *Jardin des Plantes*, it having originally been intended for a botanical garden alone, which was instituted in 1633, according to a plan laid down by Guy la Brossé, physician to Louis XIII. After the death



of La Brosse, the original professor of botany of this institution, a chemical laboratory, and an anatomical theatre, together with professorial chairs in these sciences, were added to it, and the foundation was laid for the several collections. The name of *Jardin des Plantes* was altered into that of *Muséum National d'Histoire Naturelle*, by a decree of the National Assembly, in the year 1793, when the institution received its present organisation. We shall confine ourselves to a short account of the collections, and refer the reader for a complete history of this interesting establishment to Fischer's *National Museum der Natur-Geschichte zu Paris*, 1802, and Jussieu's *Notice historique, &c.*, in the *Annales du Muséum d'Histoire Naturelle*, vols i. and ii.

The upper story of the building is set apart for zoology. Here we find not only the systematic and trivial names affixed to all the species, but also tickets descriptive of the families and orders into which the animals are distributed. Thus, for instance, on entering the apartment containing the mammalia, the following inscription is seen above the glazed cases at the right hand side.

# I Division.

Point d'ailes membranaceuses ni de nageoires  
*Quadrupèdes* proprement dits.

## I Sousdivision.

Les quatre pieds en forme de main  
*Quadrumanes*.

## I Ordre.

Dents incisives laniaires et molaires.

## I Genre : *Simia* ; Singe.

Quatre dents incisives à chaque mâchoire ; angle facial de 65 degrés ; point d'abajoues, ni de queue.

After which follow the species of the genus *Simia*.

The mammalia are in glazed cases, on which the light is thrown from above, as is the case in all the rooms. Some species of considerable magnitude, such as the giraffe, brought by Vaillant from Africa, the rhinoceros, &c. are without covering, and placed in the middle of the apartment.

The great saloon, adjoining the mammalia room, contains the remaining animals, all of them systematically arranged and ticketed, in the same manner as the mammalia. The number of birds is very considerable. The amphibious animals are classed after Lacépède's system, as are the fishes. The animals without vertebræ are disposed after Lamarck's classification: the mollusca which belong to this class are preserved in spirits, and to each shell is added the animal thus preserved, where it could be obtained. Between the mollusca and crustacea are placed the *annelides*, one of the classes of Lamarck's arrangement, comprising amphinome, aphrodite, nereis, &c. The crustacea are preserved in spirits, and also in a dried state. The complete collection of spiders, separated by Lamarck from the insects which undergo a metamorphosis, are deposited in glazed cabinets. The collection of insects is particularly enriched by the many scarce and beautiful species formerly in the possession of Réaumur and Dombey. In a separate glass case are contained the most rare and beautiful caterpillars, both in spirits, inflated with air, or modelled in wax. The intestinal worms are not numerous; but the collection of the *radiaires* is remarkably complete. The polypi are deposited in four large glass cases, and comprehend many scarce species.

The first room on the ground floor is allotted to the vegetable productions, which are disposed in large glass cases. Among the more remarkable objects in this room are, the collection of specimens of wood in large square pieces; the

collection of fruits in spirits, which are partly preserved, and in a dried state, partly modelled in wax; a collection of gums and resins; and, in an adjoining small room, the herbaria, which, among others, contain Tournefort's, Vaillant's, and Haller's plants, together with the treasures collected by Dombey, Commerçon, Forster, &c.

In the two adjoining apartments are deposited the minerals, arranged after Haüy's system, in sixty upright glass cases: the first room contains, in thirty-one cases, the acidiferous substances, the earthy substances, and those minerals whose nature and affinity are not yet sufficiently well understood; the twenty-nine cases of the second room contain the inflammable substances, the metals, the various aggregated minerals or rocks, and the volcanic productions. This collection is particularly well calculated to make the student acquainted with the method of the celebrated Haüy.

The next room contains the collections of fossil bones and petrifications, the greater part of which were brought together by the exertion of M. Faujas St. Fond.

The library, on the same floor with the mineral and vegetable rooms, is very rich in works relative to natural history, chemistry, and anatomy. In it are also preserved Commerçon's and Plumier's drawings and manuscripts, the Chinese drawings of fishes, and the *velins*, or that beautiful collection of drawings which was begun as early as the time of Vallot (one of the first directors of the *Jardin des Plantes*), and which, a few years ago, constituted sixty-four volumes, forty-nine of which contain drawings of plants. Among the artists who have contributed to them are, Robert, Aubriet, Abeille, Desfontaines, Joubert, Madelaine, Basseforte, Van Spaendonk, Marechal, Redouté, feu. and jun., Oudinot, &c. The drawings last finished are always exhibited to the public in the library. In the saloon of the library we see an exquisite statue of Buffon, with the inscription, MAJESTATI NATURÆ PAR INGENIUM.

A most valuable part of this repository is the cabinet for comparative anatomy. In the first room of it, adjoining Cuvier's house, are deposited the anatomical preparations belonging to white-blooded animals, being a collection of the most delicate preparations, almost all of them by the hands of Cuvier. Each animal is exhibited both in its natural state, and displayed by dissection. In this first room is also preserved the superb collection of models in wax of the animals represented in the "*Testacea utriusque Siciliae*," by Poli, under whose superintendence they are executed: during the revolutionary wars this collection had found its way into Hermann's cabinet at Strasbourg, from whence it was afterward obtained by the Museum for the moderate sum of 6000 livres. These preparations are exquisitely beautiful, and superior even to those of Fontana.

The second room contains the organs of red-blooded animals preserved in spirits, and classed, in some measure, according to their functions. Among the human brains is the cerebrum of Daubenton.

In the third room are deposited the skeletons of birds, Pinçon's preparations in wax, and various other objects of comparative anatomy.

The fourth room contains a considerable collection of skeletons of fishes and amphibious animals, executed by the indefatigable Rousseau with unparalleled care; also a very instructive collection of crania and teeth of various animals.

The fifth room is appropriated to skeletons of the larger ruminating and other animals, among which is that of the giraffe, from the collection of the stadholder.

The sixth room contains skeletons of ruminating animals of the genera *bos*, *antilope*, *capra*, and *ovis*; in the seventh, are deposited those of the *feræ*, *didelphis*, flying mammalia, species



species of myrmecophaga, armadillos, elephants, rhinoceros, and tapir. In the eighth room is deposited the rich collection of skeletons of simia, of glires, &c.; also the well-proportioned skeleton of Bebe, the dwarf; skeletons of mummies, &c.

In the ninth large room are preserved the large osseous frames of whales, skeletons of dolphins, crania of the narwhal, &c.

The menagerie of the National Museum is kept in a good state, and generally very rich in scarce and curious animals. The botanical garden of this institution is among the most celebrated in Europe. For a detailed account of it, we refer to the works above quoted.

MUSEUM at Oxford, called the *Ashmolean Museum*, is a noble pile, erected at the expence of the university, for the promoting and carrying on several parts of curious and useful learning. It was begun in 1679, and finished in 1683, at which time a valuable collection of curiosities was presented to the university by Elias Ashmole, esq. and the same day there repositied, and afterwards digested and put in a just order by Dr. Plott, who was constituted first keeper of the museum.

Divers considerable accessions have been since made to the museum; as of hieroglyphics, and other Egyptian antiquities, by Dr. Huntingdon; and of an entire mummy, by Mr. Goodyear; of a cabinet of natural curiosities, by Dr. Lister; also of divers Roman antiquities, altars, medals, lamps, &c.

Over the entrance of the museum is this inscription; MUSEUM ASHMOLEANUM, SCHOLA NATURALIS HISTORIÆ, OFFICINA CHYMICA.

MUSGRAVE, WILLIAM, M. D. in *Biography*, a learned physician, was born at Charlton-Musgrave, in Somersetshire, in 1657. He was educated at Winchester, and afterwards at Oxford, where he was made probationer fellow of New college in 1675. His first intentions were to study the law; but he afterwards adopted the profession of medicine, and was elected a fellow of the Royal Society, of which body he was appointed secretary in 1684. In this capacity he edited the Philosophical Transactions, from N<sup>o</sup> 167 to N<sup>o</sup> 178 inclusive: he likewise communicated several papers on anatomical and physiological subjects to the society. In 1689, he took the degree of doctor of physic, and became a fellow of the College of Physicians. Ultimately, however, he quitted London, and settled at Exeter, where he practised his profession, with considerable reputation and success, for nearly thirty years, and died in 1721. Beyond the circle of his practice, he made himself known principally by his two treatises on gout: the one, "De Arthritide Symptomata," Exon. 1703; the other, "De Arthritide Anomala sive Interna," ibid. 1707; both which were several times reprinted. They contain numerous cases of the disease, under all its forms and irregularities; but the author not unfrequently ascribes to gout, symptoms which probably were not connected with that malady. Nevertheless, these are valuable practical works.

Dr. Musgrave was also a distinguished antiquary, and published several learned tracts upon the subject of his researches in this way; especially one, entitled "Belgium Britannicum," 1719, octavo, which treats of the topography, history, and antiquities of Hampshire, Wiltshire, and Somersetshire, which were anciently in the possession of a tribe of Belgæ. He likewise published "Julii Vitalis Epitaphium cum Commentario," 1711; "De Legionibus Epistolæ," "De Aquilis Romanis Epistolæ," 1713; "Inscriptio Tarraconensis, cum Commentario;" "Geta Britan-

nicus," &c. 1715; and "Differtatio de Dea Salute," 1716. Gen. Biog.

MUSHAKEN, in *Geography*, a town of Persia, in the province of Irak; 35 miles N.N.W. of Ispahan.

MUSHIEDAU, a town of the kingdom of Candahar; 60 miles W. of Ghizni.

MUSHROOM, in *Botany*. See FUNGI, PHALLUS, and AGARIC.

Matthioli mentions mushrooms which weighed thirty pounds each, and were as yellow as gold; Fer. Imperatus tells us, he saw some which weighed above a hundred pounds a-piece; and, to add no more, the Journal des Sçavans furnishes us with an account of some growing on the frontiers of Hungary, which made a full cart-load.

The poison of mushrooms has been much talked of by several persons; but there seems to be no certain account of any body's ever having been injured by eating the common mushroom, unless by accident, as from the eating too many at once, and thereby over-loading the stomach; or by their being eaten by persons who had a particular dislike to them, as some persons have to the most innocent aliments, particularly to cheese. If these mushrooms had any poisonous quality, it must have been often found out by the physicians in such a place as London, where there are annually such vast quantities of them consumed, yet nothing of this kind is observed; and there seems, upon the whole, to be nothing hurtful in this species; though there may be many others which are truly poisonous. Nor is it more wonderful, that the different subjects of this class of vegetables should differ in their virtues, than that those of other kinds should. The roots of carrots and parsnips are daily found a very wholesome food, while those of other plants of the same class, such as the water-hemlock, the dropwort, and others of the umbelliferæ, are known to be poisonous.

The ancients have taken great pains to distinguish the several kinds of mushrooms, that the world might know the hurtful from the safe. The boletos mentioned by Juvenal, on account of the death of the emperor Claudius, is sufficiently described by Pliny. Clusius, among the moderns, has described a vast number of different species, every where distinguishing the esculent and wholesome from the poisonous or pernicious kinds. The several authors who have treated of them since the time of Clusius, have all mentioned the effects of some or other of the poisonous kinds; and there are numerous instances of the mischief done by them at one time or other. Some have been willing to ascribe this mischief to animalcules inhabiting the plant; but this seems erroneous, and particularly from the following instance: we have one kind of mushroom growing in England, called the white acrid fungus. This is so extremely sharp, that it stimulates the tongue, as if it had been touched with spirit of nitre: and Tournefort observes, that if rubbed on blue paper, it turns it red in the same manner as that liquor, or any other of the violent acid spirits would: this caustic quality remains in the plant even after drying; and it is very evident, that we need look no farther than this for the origin of the poisonous quality in this species. There is another kind which is observed to kill the very flies as they settle upon it. It is not probable that such plants as these should be inhabited by any kind of animalcules, nor is it necessary to have recourse to such causes of the mischief which ensues from the eating them, when their own juices seem so very able to have occasioned it. Philof. Trans. N<sup>o</sup> 473. p. 54.

Mr. Miller says, that the true eatable mushroom is distinguished



guished from the poisonous and unpleasent kinds by these marks; when young, it appears of a roundish form, like a button, the stalk as well as the button being white, and the fleshy part very white, when broken, the gills within being livid. As they grow larger, they expand their heads by degrees into a flat form, and the gills underneath are at first of a pale flesh-colour; but as they stand long, become blackish. See AGARIC and PHALLUS.

In order to propagate mushrooms, the meadows and pastures should be searched for them in August and September; and wherever they are found, the ground should be opened all about the roots, where there will be found abundance of small white knobs. These are to be taken up with lumps of earth about them. The mushroom beds should be made of dung, in which there is good store of litter; but this should not be thrown in a heap to ferment, that dung which hath lain spread abroad for a month or longer is the best. These beds should be made on dry ground, and the dung laid upon the surface: their width at bottom should be about two and a half, or three feet, and length in proportion to the quantity of mushroom desired; then lay the dung about a foot thick, covering it about four inches with strong earth; upon this lay more dung about ten inches thick; then another layer of earth, still drawing in the sides of the bed, so as to form it like the ridge of a house, which may be done by three layers of dung and as many of earth; when the bed is finished, it should be covered with litter, or old thatch, to keep out the wet and prevent its drying: in this situation it may remain eight or ten days, by which time the bed will be in a proper degree of warmth to receive the spawn; the litter should then be taken off, the sides of the bed smoothed, and a covering of light rich earth, about an inch thick, should be laid over the bed; upon this the spawn should be put, laying the lumps two or three inches asunder; then gently cover them about half an inch thick with the same light earth; and again put on the covering of litter. When these beds are made in the spring or autumn, as the weather is in those seasons temperate, the spawn will take much sooner, and the mushrooms will appear perhaps in a month after they are made; but those beds which are made in summer, when the season is hot, or in winter, when the weather is cold, are much longer before they produce. The great skill in managing these beds is to keep them in a proper temperature of moisture: during the summer season, the beds may be uncovered to receive gentle showers of rain at proper times; and in long dry seasons, they should be now and then gently watered: during the winter season they must be kept as dry as possible, and so closely covered as to keep out cold. In frosty, or very cold weather, the growth of the mushrooms will be promoted by laying over them some warm litter, shaken out of a dung heap, interposing a covering of dry litter between the bed and this warm litter: and as often as the litter is found to decay, it should be renewed with fresh; and as the cold increases, the covering should be laid so much thicker. In this way plenty of mushrooms will be produced all the year; and those raised in beds will be much better for the table than any which are gathered in the fields. A bed thus managed, if the spawn takes kindly, will continue good for several months, and produce great quantities of mushrooms; from these beds, when they are destroyed, you should take the spawn for a fresh supply, which may be laid up in a dry place until the proper season of using it, which should not be sooner than five or six weeks, that the spawn may have time to dry.

The vast variety of known funguses, which are found regularly every season in their proper soils, are not all that the naturalist has to enquire into the nature of; there are others whose productions are much more surprising. These are such as are only seen once or twice in an age, and that in places where it is very difficult to account for the manner of their production. One of these we had some years ago, which appeared upon an old piece of wood in a blacksmith's cellar in the Haymarket, and grew to twelve inches or more in height; and, when cut down, appeared again at the same time the next year, and so on for several succeeding years, as if, contrary to the nature of the generality of these plants, it had a perennial root, and grew regularly from the old stock. This appeared to us a singular production, and a wholly new species; but so long ago as in the year 1692, Mr. Tournefort found such a one growing on an old beam in the abbey at St. Germain. His description of it is very accurate; and its resemblance with our's as great as could be expected, in so loose a growing plant as an irregular fungus. The beam on which this mushroom grew was very firm and sound in all other places, but just where it was rooted there was a crack, out of which moisture oozed; and probably the beam was in that part rotten, or worm eaten within. The smell of the plant was like that of others of the same kind, and an infusion of a piece of it turned an infusion of turnsole to a bright red; so that it manifestly abounded in acids.

It is not easy to account for the appearance of these plants which are seen so rarely, and that in places where no plant could be expected to grow: the only probable solution of the point seems this, that as the seeds of the mushroom kind are all very minute, and generally in these species which have no lamellated heads, cover the whole surface of the leaves, the number of seeds produced by one such plant must be numerous beyond all account, and at the same time light enough to float about in the air. These must be at times thrown against a thousand different bodies where there is no proper nourishment for them, and must therefore perish; whereas, if any accidents are required to concur, to make a soil proper for it to grow in, wherever such soils happens to be produced, as the air has free access every where, it is not impossible but that, at one time or other, one of these small seeds may happen to be properly deposited. Mem. Acad. Par. 1692.

The Laplanders have a way of using funguses, or common toad-stools, as we call them, as the Chinese and Japanese do the moxa, to cure pains. They collect the large funguses which they find on the bark of beech and other large trees, and dry them for use. Whenever they have pains in their limbs, they bruise some of this dried matter, and pulling it to pieces with their fingers, they lay a small heap of it on the part nearest to where the pain is situated, and set it on fire. In burning away, it blisters up the part, and the water discharged by this means generally carries off the pain. It is a coarse and rough method, but generally a very successful one, especially when the patient has prudence enough to apply it in time, and resolution enough to bear the burning to a necessary degree.

MUSHROOM, *Pepper*. See PEPPER.

MUSHROOM Galls, in *Natural History*, a name given by authors to a small species of galls very common on the leaves of the oak in September and October, and resembling the common esculent mushroom. They are placed on the upper surface of the leaf, and are often in great numbers on it. The leaves which have considerable numbers upon them make a very beautiful figure, and appear as if ornamented  
by



by art with a number of elegant figures. These galls are usually about a sixteenth, though sometimes a tenth of an inch in the diameter; they are composed of an orbicular head, which adheres to the leaf by a very short pedicle, so that its edges which droop a little in the manner of those of the common mushroom, usually touch the surface of the leaf all round. These little galls are of various colours, according to their different degrees of maturity; they are of a greenish-white at first, after that they become of a yellowish tinge, from which they pass through all the shades of orange and flame-colour to a very beautiful red, which is always their colour when perfectly mature. When they are observed by the microscope, their surface appears hairy, and the several hairs all stand near one another at their bases, and diverge at their points, as is the natural consequence of their standing on a convex body. Reaumur, Hist. Insects, vol. vi. p. 194.

The use, as well as the figure, of this gall is very singular. Malpighi and M. Reaumur have both described it, and the former of these authors describes a cavity in the centre of the head; but this seems to have been done at random, and rather supposed from analogy, than seen in fact; for the latter author, who is perhaps one of the most accurate observers that ever wrote, could never find any cavity in any one of the great numbers he dissected; but he observed what was an use of the same kind with that of the other galls, in this, though performed in a different manner; they are plainly all destined for the lodgment and security of small animals; not to be distinctly seen without the help of glasses; but they are of the nature of those worms which turn into two-winged flies.

The flies into which these worms are finally transformed, have not yet been discovered; but this is no wonder, since the animals themselves are so minute as to require glasses to view them. It is probable that they undergo their change in the chrysalis state in some other place, for they are never found in it under the galls; but this is common also to many other species.

**MUSHROOM WORMS.** The various species of mushrooms are subject to be eaten and destroyed by a great variety of insects. There is, however, one species which is more frequent than all the rest, and which has therefore obtained, among authors, the name of the mushroom worm. This is a white worm, with a hard scaly black head; it has some fleshy tubercles, which it throws out at pleasure from the under part of its several rings, and which serve it as legs. This is found indifferently in almost all the species of mushrooms; but in none so frequently as in the great wood-fungus, which is porous and greenish underneath. It is found to change to a tipula or long-legs of no great beauty, being of a dusky brown colour, and middling size.

The other species of funguses have also their worms; but there is one of a very singular nature which is found frequently on the agaric which grows on the stumps of oak trees especially near the roots. This is a long and slender worm, somewhat flattened, and resembling a small leech, but that it has a hard and scaly head of a blackish colour. The body is composed of many rings, in the manner of the earth-worm, and looks very bright and glossy, being always covered with a viscous liquor. This creature is easily found, for it never eats into the substance of the fungus, but only crawls about its surface; the traces, wherever it has been, are marked with a coat of a shining varnish, and resemble the places over which snails have crept.

This worm makes a very beautiful object for a microscope. When young it is as transparent as glass, and the

motion of its internal parts is very easily distinguished. When this creature is to pass into the chrysalis state, it does not remove from the fungus, but spins itself a web, and remains upon it. This web is composed of the same matter with the covering or habitation under which it usually resides, but it is thicker, more opaque, and of a coarser structure.

The creature remains about a fortnight under this covering, and then comes forth in the form of a fly, which is evidently a species of tipula. It has very long legs, and a long and slender body; the body is brown, and the breast yellowish; the wings are long and slender, and the antennæ are of a very singular and remarkable figure; they are broad and flat, and yet terminate in a point. These are composed of several articulations, and make a very beautiful figure when examined by the microscope.

Besides these, this fly has, in the manner of the other tipulæ, a pair of beards placed on the anterior part of the head, which it at pleasure bends down over the face, and completely covers with them the longitudinal fissure, which is the mouth, situated in this as in the other tipulæ. Reaumur, Hist. Inf. vol. ix. p. 23. seq.

**MUSIC,** as well defined by Rousseau, is the art of combining tuneable sounds in a manner agreeable to the ear. This art becomes a profound science, when geometry is called in to find and to ascertain the principles of these combinations, and the ratios of those affections which they excite. Aristides Quintilianus defines music the art of finding the beautiful and decorous in musical tones, and in their measure. It is not surprising, that with definitions so vague and general, the ancients have given a latitude so extensive to the art which is thus defined.

It is generally supposed, that the word music comes from *musa*, because it was imagined that the art was invented by the Muses; but Kircher, from Diodorus Siculus, derives the title from an Egyptian word, pretending that it was in Egypt that music began to be cultivated after the deluge, and that the first found that was heard came from the reeds on the banks of the Nile, when blown into by the wind. Whatever etymology may be adopted, the origin of the art certainly came from something nearer man, and if speech has not begun by singing, it is certain at least, that whenever men speak, they sing.

Music naturally divides itself into theoretical or speculative, and practical. *Speculative* music may, perhaps, be called a knowledge of musical materials, that is, of the different ratios of grave and acute, quick and slow, harsh and sweet, loud and soft, of which sounds are susceptible; relations which comprehend all the combinations possible of sounds and of music, and seem also to include every cause of those impressions which their succession can make upon the ear and the soul.

*Practical* music is the art of applying and judiciously making use of speculative principles, that is to say, of conducting and disposing sounds with respect to their consonance, duration, and succession, in such a manner, that the whole may impress upon the ear the effect proposed; it is this art which is called *composition*, which see. With respect to the natural production of sounds by voices or instruments, which is called *execution*, it is merely a mechanic operation, which only supposes the faculty of producing just intervals, accurate duration of notes, and giving to each sound the degree prescribed by the key, and the value required by the time; all which rigorously requires no other



knowledge than that of musical characters, and the habit of expressing them.

*Speculative* music consists of two parts; knowledge of the ratio of sounds or their intervals, and of their relative duration, with respect to time or measure.

The first is what the ancients called *harmonics*. It teaches in what melody consists, and marks what is consonant, agreeable or displeasing in modulation. It shews, in short, the different ways by which sounds affect the ear by their quality of tone, their force, and their intervals; all which is equally applicable to their accord and succession. The second has been called *rhythmic*, because it treats of sounds with respect to time and quantity. It contains the explication of rhythm, of time, of long and short measures, lively and slow, of times and their different proportions into which they are divided, in applying them to sounds in their succession.

Practical music, likewise, divides itself into two parts, which correspond with the two preceding.

That which answers to harmonic music, and which the ancients called *melopœia*, contains the rules for combining and varying intervals, consonant and dissonant, in an agreeable and melodious manner. See *MELOPŒIA*.

The second division, which answers to rhythmical music, and which is called *rhythmopœia*, contains rules for the application of accents, feet, and measures, indeed for the practice of rhythm. See *RHYTHM*.

Porphyry gives another division of music, confined to motion, whether silent or sounding; and without distinguishing it into speculative and practical, he finds the six parts following:

*Rhythmic*, for dancing movements.

*Metrical*, for the cadence and numbers in versification.

*Organic*, for the practice of instruments.

*Poetic*, for the tones and accents of poetry.

*Hypocritic*, for the attitudes of pantomimes, and *Harmonic* for melody.

Music, at present, divides itself more simply into melody and harmony; for with rhythmic we have no longer any concern, and very little with the metric, as our verses in singing take their measure solely from music, and lose the little they have in themselves.

By the melody, we direct the succession of sounds in such a manner as to produce agreeable airs. See *MELODY*, *AIR*, and *MODULATION*.

Harmony consists in uniting to each of these sounds, in a regular succession, two or more other sounds, which striking the ear at the same time, flatter it by their concord. See *HARMONY*.

We might, and we ought, perhaps, to divide music still further, into *natural* and *imitative*; the first, confined to the mere physical property of sounds, and acting only upon the sense, does not carry its impression to the heart, and can only give sensations more or less agreeable. Such is the music of songs, hymns, canticles, and all the airs which are only combinations of melodious sounds, and in general, all music which is only harmonious. (1)

The second by lively inflexions or passages accented, and in a manner speaking, which expresses all the passions, paint all scenes, represent all objects, submit all nature to its learned imitations, and thus penetrating the heart of man with sentiments which have the power to move it. This music, truly lyrical and dramatic, was that of the ancient poems. And it is that of our own times, in which we try to dramatise in song. It is only in this music, and not in mere harmony and agreeable combinations, that we should

seek to account for the agreeable effects it produced formerly. As long as we seek for moral effects from physical causes of sound, we shall never find them, and only reason without knowing what we are talking about.

Ancient writers differ very much among themselves concerning the nature, object, extent, and departments of music. In general they give to this word a sense much more extensive than that which it retains at present. They not only comprehend under music, as we have elsewhere observed, dancing, gesture, and poetry, but even the aggregate of all the sciences.

Hence all that sublime music of which philosophers speak; music divine, human music, celestial music, terrestrial music, active music, contemplative music, music enunciative, intellectual, oratorical, &c.

It is under these vast ideas that we must understand many passages of the ancients concerning music, which would be unintelligible in the sense which we give this word at present.

It appears that music has been one of the earliest arts; we find it among the most ancient monuments of human kind. It is also very probable that vocal music was found before instrumental, if ever there was among the ancients any music purely instrumental, that is, composed purposely for instruments. Not only before any instrument was found, men must have observed a difference in the tone of human voices, as well as early learned, from the natural concerts of birds, to modify their voices in a melodious and agreeable manner: after that, wind instruments might have been first invented; Diodorus and other authors ascribing the invention to observations that were made of the whistling of the wind in reeds, and in the pipes of other plants. This was also the opinion of Lucretius.

“ At liquidas avium voces imitauerunt  
Ante fuit multò, quam lævia carmina cantu  
Concelebrare homines possint, aureisque juvare;  
Et zephyri cava per calamorum sibila primum  
Agrestibus docuere cavas inflare cicutas.”

With respect to other instruments, sounding strings are so common, that men must have observed their different tones very early; and this of course must have given birth to stringed instruments. See *STRING*.

Instruments of percussion, such as tabors and drums of different kinds, must have originated from the sonorous ringing of hollow bodies, when struck.

It is difficult to divest ourselves of these general ideas, in order to have recourse to other means for the invention of music as an art. Without mounting higher in the history of the world than the deluge, many of the ancients attribute the invention of music itself to Mercury, as well as the lyre. Others make the Greeks obliged to Cadmus, who, in flying from the court of the king of Phœnicia, brought Hermione, or Harmony, into Greece. Whence it follows, that the art was known in Phœnicia before the time of Cadmus. In one part of Plutarch's Dialogue on Music, Lycias says that it was invented by Amphion; in another place, Soterius says that it was Apollo; and in still a third place, he seems to give the honour to Olympus. They hardly ever agree on the subject, nor is it of much importance that they should.

To these first inventors succeeded Chiron, Demodocus, Hermes, and Orpheus, who, according to some, invented the lyre. After these came Phœmius; then Terpander, contemporary with Lycurgus, who furnished rules for music. Some ascribe to him the invention of the first modes. At length



length Thales is added, and Thamyris, who is said to have been the inventor of instrumental music.

Most of these great musicians lived before Homer. Others more modern were Lasus of Hermione, Melanippides, Philoxenus, Timotheus, Phrynnis, Epigenius, Lyfander, Simmicius, and Diodorus, who have all considerably contributed to the perfection of music.

.It is pretended that Lasus was the first writer on the art, in the time of Darius Hytaspes; that Epigonius invented the instrument with four strings, which bore his name. Simmicius invented also an instrument of thirty strings, called Simmicium.

Diodorus perfected the flute, and increased the number of holes; and Timotheus the lyre, by adding a new string to it, for which he was fined by the Lacedæmonians.

As ancient authors explained themselves very obscurely concerning the inventors of musical instruments, they are also very unintelligible concerning the instruments themselves, of which we know little more than the names. See INSTRUMENT.

Music was in high estimation among many people of antiquity, but principally the Greeks; and this esteem was proportioned to the power and surprising effects which they ascribed to the art. Their authors thought they could not exalt it sufficiently, without lifting it up to heaven, and assuring us that it was the principal amusement of the gods, and reward of the blessed.

Plato has the courage to say, that no change can be made in music, without affecting the constitution of the state; and pretends that there are sounds which excite meanness of soul, insolence, and their contrary virtues. Aristotle, who seems to have written his Politics only to oppose the sentiments of Plato, agrees with him, however, concerning the power which music has over morals. The judicious Polybius tells us, that music was necessary to soften the manners of the Arcadians, who inhabited a country where the air was cold and impure; that those of Cynethia, who neglected music, surpassed all the Greeks in cruelty, and that there was no city in which so many crimes had been perpetrated. Athenæus assures us, that formerly all laws divine and human, exhortations to virtue, knowledge of what concerned the gods and heroes, the lives and actions of illustrious men, were written in verse, and sung publicly in chorus to the sound of instruments. And we see by our sacred books, that such were, from the earliest times, the usages among the Israelites, as more efficacious had not been found, of engraving in the mind of man the principles of morality and love of virtue; or rather, this was not the effect of a pre-meditated plan, but of the grandeur of sentiment and elevated ideas, which sought by proportionate accents to form a language worthy of them. (2)

Music made a part of the study of the Pythagoreans: they used it to inspire the heart with laudable actions, and to inflame it with the love of virtue. According to these philosophers, our soul was in a manner composed of harmony; and they believed that they could establish, by means of the harmony of sense, the intellectual harmony and primitive faculties of the soul; that is to say, that which, according to them, subsisted in its pre-existent state, before it animated our bodies, and when it inhabited the heavens.

Music is at present fallen from this degree of majesty and power, so low as to make us doubt of the truth of those wonders which it operated formerly, though attested by the most judicious historians and most grave philosophers of antiquity. However, we find in modern history some similar facts. If Timotheus excited the fury of Alexander by the

Phrygian mode, and calmed it by the Lydian, a music more modern is said to have extended this power still farther, in exciting in Eric, king of Denmark, such a fury as to kill his best domestics. Doubtless these unfortunate domestics were less sensible to the charms of music than their prince, otherwise he might have run the risk of sharing half the danger. D'Aubigny relates another story, quite similar to that of Timotheus. He says, that in the reign of Henry III. of France, the musician Claude le Jeune, playing at the nuptials of the duke de Joyeuse in the Phrygian mode, animated, not the king, but a courtier, who forgot himself so far as to put his hand to his sword in the presence of his sovereign; but the musician, hastening to calm him, had recourse to the Hypo-Phrygian mode. This is said with as much confidence, as if the musician Claudius knew exactly in what the Phrygian mode and the Hypo-Phrygian consisted!

If our music has but little power over the affections of the soul, it is at least capable of acting physically upon the body: witness the history of the tarantula, too well known to be mentioned here. (3). Witness, too, the Gascon knight, mentioned by Boyle, who, at the sound of a bagpipe, could not retain his water; to which we must add, what the same author relates of those females, who burst into tears when they heard a certain tune, which had no uncommon effect on the rest of the audience. Rousseau adds, "and I knew at Paris a woman of condition, who could not bear any kind of music, without being seized with an involuntary and violent fit of laughter." We read, in the History of the Academy of Sciences, of a musician who was cured of a violent fever by a concert at his bed-side. Sounds act even upon inanimate bodies, as is manifested by the vibrating and resonance of a sonorous body, when another, with which it is perfectly in tune, is caused to sound. Morhoff mentions a certain Dutchman, of the name of Petter, who broke a glass by the sound of his voice. Kircher speaks of a great stone, which vibrated at the sound of a certain organ-pipe. Pere Merfenne also speaks of a certain flag-stone in the pavement of a church, which trembled at the sound of an organ, as much as if there had been an earthquake. Boyle adds, that the stalls tremble often at the sound of the organ in a cathedral; that he has felt them tremble under his hand, at the sound of the organ or a voice; and he has been assured, that those which were firmly put together, vibrated at some determinate tone. Every one has heard of a famous pillar in the church at Rheims, which trembles sensibly at the sound of a certain bell, while the other pillars remain motionless; but what bereaves sound of the marvellous in this case is, that this same pillar equally shakes, when the clapper is taken from the bell.

All these examples, the chief part of which belong more to sound than music, and of which physics can give some explanation, render not the marvellous and almost divine effects, which the ancients attributed to their music, more intelligible or worthy of credence. Many authors have tormented themselves in trying to account for this. Wallis attributes it greatly to the novelty of the art; and the exaggeration of authors. Some bestow all the honour upon poetry; while others again suppose that the Greeks, having more sensibility than we, from the constitution of their climate or their manner of living, might be moved by things which we never feel. M. Burette, even in adopting all these tales, is of opinion that they prove nothing as to the perfection of the music that has produced them: he sees nothing in their performance but what miserable village fencers might have achieved, according to him, as well as the first musicians in the world.



Most of these sentiments arise from our persuasion of the excellence of modern music, and from the contempt which we have for the ancient. But is this contempt as well founded as we imagine? It is a subject that has often been discussed, and which, from the obscurity of the matter, and from the insufficiency of the judges, is still in need of better discussion. Of all those who have entered the lists in this conflict, Isaac Vossius, in his treatise "*De Poematum cantu, et de Viribus Rhythmi*," seems best to have discussed the question, and approached the nearest to truth. (4).

The world has so long wished to see some fragments of the music of the ancients, that father Kircher and M. Murette have laboured to gratify the public on the subject. (5) But who shall dare, says Rousseau, to judge of ancient music by such fragments? I suppose them faithful, but should wish that those who examine them should sufficiently know the genius and accent of the Greek language; that they should recollect, that an Italian is an incompetent judge of a French air, and that a Frenchman is utterly ignorant of Italian melody: then let them compare times and places, and pronounce, if they dare.

Thus far, in this important article, which furnishes a text for almost all other articles in our musical department, we have faithfully translated Rousseau, preferring him to all other musical lexicographers, for his eloquence, good taste, and enlarged views on imitative or dramatic music. We must however own, that he has some strong prejudices, perhaps bordering on paradox, as in his other writings; and in some few instances, there is a want of recent and accurate information. These, however, we shall point out, to put our readers on their guard against error as much as we are able, particularly in writers of eminence.

Notes to Rousseau's article *Music*.

(1). We think that Rousseau's partiality here for *imitative* or *dramatic* music, made him forget that there was any other. To imitate the human speech and passions, it is doubtless the highest style of musical composition and performance; but as there are three distinct styles of music, as *musica di chiesa*, church music; *musica teatrale*, theatrical music; and *musica di camera*, chamber music, we shall, therefore, plead the cause of all. As we cannot always be in a theatre, is *harmonic* music to be banished the church and the chamber? In the church its reverential and solemn simplicity render it fittest for the place and purpose of its performance. Imitative music is not precluded the chamber in cantatas and opera scenes; but mere instrumental music brought to its present degree of perfection in the trios, quartets, quintets, and symphonies, such as those of Haydn, Mozart, and Beethoven, can amuse, interest, and delight cultivated ears even to rapture. Yet this sublime music is not properly imitative, there being no words to explain it, or fix its meaning.

(2). The numerous stories of the extensive use and miraculous powers of ancient music have been lately so often told by musical historians and others, that our lexicographer might have spared himself the trouble of repeating them.

(3). Rousseau had not heard that this medical and miraculous power of music, so long believed and asserted, "has not the least truth in it." See *Phil. Trans.* vol. lx. for the year 1770, letter from Dr. Cirillo; and "*Lezioni sopra la Tarantula*," Nap. 1770.

(4). This partiality for Isaac Vossius will be further considered under the biographical article of this credulous champion for the music of the ancients.

(5). But Vincenzo Galilei, and Dr. Fell, bishop of Oxford, were the first editors of these fragments of ancient Greek music.

The article *Music* of Rousseau is in fact a compendium of its history. After an eulogium on Isaac Vossius, he mentions the national tunes given on the plates of his dictionary. The celebrated Swiss tune, called the "*Rans des Vaches*," an air, he says, so dear to the Swiss, that it was forbidden under the pain of death to play it to the troops, as it immediately drew tears from them, and made those who heard it desert, or die of what is called *la maladie du pais*, so ardent a desire did it excite to return to their country. It is in vain to seek in this air for energetic accents capable of producing such astonishing effects, for which strangers are unable to account from the music, which is in itself uncouth and wild. But it is from habit, recollections, and a thousand circumstances retraced in this tune by those natives who hear it, and reminding them of their country, former pleasures of their youth, and all those ways of living, which occasion a bitter reflection at having lost them. Music, then, does not affect them as music, but as a reminiscence. This air, though always the same, no longer produces the same effects at present as it did upon the Swiss formerly; for having lost their taste for their first simplicity, they no longer regret its loss when reminded of it. So true it is, that we must not seek in physical causes the great effects of sound upon the human heart.

Rousseau, wishing to have no important part of the science or art of music unnoticed in his long article on the subject, speaks of the Greek musical notation, upon which, however, he has been able to throw no new light. See the articles *MUSICA Antiqua*, *CHARACTERS*, *BOETHIUS*, *Pope GREGORY*, *GUIDO*, *POINTS*, *STAFF*, and *GAMMUT*.

The invention of modern musical characters has been long ascribed to John de Muris, but erroneously. See *TIME-TABLE* and *DE MURIS*, where he acknowledges himself, that Franco was the inventor of the first characters used for time in counterpoint. See *FRANCO*.

Rousseau, in the recapitulation of his elaborate article, gives a list of Greek, Roman, and modern writers on the subject of music of the greatest eminence; but these will be found detailed in their several alphabetic places. As all the writers on music from Aristoxenus to the present time, that could be found, have been procured and consulted, and for others, which we were unable to appropriate, it may appear ostentatious to say, however true, that we have had recourse to most of the great libraries in Europe, such as the Vatican, the Ambrosian library at Milan, the Imperial library at Vienna, the Bibl. du Roi at Paris, the Bodleian, and principal college libraries of our universities, his majesty's library at the queen's house, the Museum library, &c. &c. in which, besides MSS. we have found almost all the printed books on music mentioned in the lists of Broffard, Padre Martini, Salmasius, Fabricius, and others. In none of these scarce books, however, nor in others in general circulation, has the derivation of the word *music*, or the *inventor* of the art, been settled to satisfaction. Some make the musical sound that was likely to have been first noticed by man, *animal*, and some *vegetable*. The dried sinews of the dead tortoise, according to some, suggested the method of producing sounds from the tension of *strings*; and zephyrs, it has been imagined, breathing through broken reeds on the banks of the Nile, were the first flutes or wind-instruments. But we should rather suppose, that in a state of nature, even before the invention of language, mankind communicated their sensations of pain or pleasure to each other by the mere cries of nature: in pain and affliction, the expressions would be groans, screams, and howling, which could never be tuned; but in joy,



joy, pleasure and affection, they would be pleasant to hear, though not formed into music, from the ideas which they would excite in the hearers, in reflecting on their own happiness when similar effusions spontaneously escaped them in their most happy moments. Wishing to renew such grateful sounds at pleasure, even by reminiscence of what they had felt in uttering them, they would try to revive them in moments of tranquillity; and as nature gives more pleasing and touching voices to one creature of the same species than another, finding themselves listened to with pleasure by others, the natural singers would consequently try to render their vocal expressions of internal satisfaction as pleasant as possible. Hence the first language, as well as first music, was intuitive, and *all improvisa*.

Of all to whom the invention of music has been assigned, there is no one to whom we are more inclined to give our suffrage than another; all we could do was to present them to the readers, and beg of each to please himself by voting for him whom they shall deem the most worthy.

*MUSICA Antiqua*, Ital., music of the ancient Greeks and Romans down to the eleventh century, when Guido Are- tino, about the year 1024, invented or *revived* music in parts, or counterpoint, which may, with propriety, be called *an- tica moderna*; ancient with respect to the Greeks, and modern with respect to us.

*MUSICA Arithmetica*, that part of the science which con- sideres sounds by the aid of numbers. These numbers are 2, 3, and 5, together with their composites. They are so called, because all the intervals of music may be expressed by such numbers. See INTERVAL.

This is now generally admitted by musical theorists. M. Euler seems to suppose, that 7 or other primes might be in- troduced; but he speaks of this as a matter doubtful and difficult. It is to be observed, that 2 corresponds to the octave, 3 to the fifth, or rather to the twelfth, and 5 to the third major, or rather the seventeenth. From these three may all other intervals be found.

A table of musical numbers within any proposed limit may be thus expeditiously formed.

Place the terms of the progression 1, 5, 25, 125, &c. in a column under each other; and multiply every term of this progression by 3, continually, till you foresee that the pro- ducts will exceed the proposed limit. Then if all the num- bers thus found be doubled continually, till it be foreseen that the doubled numbers would exceed the proposed limit: all these products together, with the powers of 2, will give the musical numbers required.

Thus, if it were required to find all the musical numbers within the compass of eleven octaves; that is, between 1 and 2048; form the column 1, 5, 25, &c. and mul- tiply every term by 3 continually, as in the annexed ex- ample:

1	3	9	27	81	243	729, &c.
5	15	45	135	405	1215, &c.	
25	75	225	675	2025, &c.		
125	375	1125, &c.				
625	1875, &c.					
&c.						

The numbers of which being doubled as often as possible within the limit 2048, and collected and ranged in order with the powers of 2, will give the following numbers, 1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 16, 18, 20, 24, 25, 27, 30, &c. as in the following table.

TABLE of musical Numbers, contained in eleven Octaves.

Num.	Chord Afc.	Chord Desc.	Num.	Chord Afc.	Chord Desc.	Num.	Chord Afc.	Chord Desc.
1	F	B	150	G*	A <sup>b</sup>	729	B	
2	F <sup>†</sup>	B <sup>†</sup>	160	A	G	750	B*	F <sup>b</sup>
3	C	E	162	A	G	768	B	E
4	F <sup>†</sup>	B <sup>†</sup>	180	B	F	800	C*	E <sup>b</sup>
5	A	G	192	C	E	810	C*	E <sup>b</sup>
6	C	E	200	C*	E <sup>b</sup>	864	D	D <sup>†</sup>
8	F <sup>†</sup>	B <sup>†</sup>	216	D	D	900	D*	D <sup>b</sup>
9	G	A	225	D*	D <sup>b</sup>	960	E	C
10	A	G	240	E	C	972	E	C
12	C	E	243	E	C	1000	E*	C <sup>b</sup>
15	E	C	250	E*	C <sup>b</sup>	1024	F <sup>†</sup>	B <sup>†</sup>
16	F <sup>†</sup>	B <sup>†</sup>	256	F <sup>†</sup>	B <sup>†</sup>	1080	F*	B <sup>b</sup>
18	G	A	270	F*	B <sup>b</sup>	1125	F*	B <sup>b</sup>
20	A <sup>†</sup>	G	288	G	A	1152	F*	B <sup>b</sup>
24	C	E	300	G*	A <sup>b</sup>	1200	G	A
25	C*	E <sup>b</sup>	320	A	G	1215	G*	A <sup>b</sup>
27	D	D	324	A	G	1250	G*	A <sup>b</sup>
30	E	C	360	B	F	1280	A	A <sup>bb</sup>
32	F <sup>†</sup>	B <sup>†</sup>	375	B*	F <sup>b</sup>	1296	A	G
36	G	A	384	C	E	1350	A*	G
40	A	G	400	C*	E <sup>b</sup>	1440	B	G <sup>b</sup>
45	B	F	405	C*	E <sup>b</sup>	1458	B	F
48	C	E	432	D	D	1500	B*	F
50	C*	E <sup>b</sup>	450	D*	D <sup>b</sup>	1536	C	F <sup>b</sup>
54	D	D	480	E	C	1600	C*	E
60	E	C	486	E	C	1620	C*	E <sup>b</sup>
64	F <sup>†</sup>	B <sup>†</sup>	500	E*	C <sup>b</sup>	1728	D	E <sup>b</sup>
72	G	A	512	F <sup>†</sup>	B <sup>†</sup>	1800	D*	D <sup>†</sup>
75	G*	A <sup>b</sup>	540	F*	B <sup>b</sup>	1875	D*	D <sup>bb</sup>
80	A	G	576	G	A	1920	E	C
81	A	G	600	G*	A <sup>b</sup>	1944	E	C
90	B	F	625	G*	A <sup>b</sup>	2000	E*	C <sup>b</sup>
96	C	E	640	G*	A <sup>b</sup>	2025	E*	C <sup>b</sup>
100	C*	E <sup>b</sup>	648	A	G	2048	F <sup>†</sup>	B <sup>†</sup>
108	D	D	675	A*	G <sup>b</sup>			
120	E	C	720	B				
125	E*	C <sup>b</sup>						
128	F <sup>†</sup>	B <sup>†</sup>						
135	F*	B <sup>b</sup>						
144	G	A						

To understand this table, it is to be observed, that by dividing a given stretched string or chord, by means of a moveable bridge, the sounds produced by its parts will be higher in pitch than those produced by the given chord. And on the contrary, if we multiply a chord, that is, by a moveable bridge lengthen the sounding part of a chord, we shall have sounds lower in pitch than the given chord. Hence we have the foundation of an ascending, and of a de- scending scale of musical sounds. The first column of each division of the table, marked *Num.*, expresses the musical numbers; the second column, marked *Afc.*, the names of the notes in the ascending scale; and the third column, marked *Desc.*, the names of the notes of the descending scale. Thus, if the given chord be unity, and called F, then will 15 be E in the fourth octave, ascending of F; 45 will be B in the sixth octave of F, &c. In the descend- ing scale, unity will be B; 15 will be C in the fourth oc-  
tave



tave descending from B; and 45 will be F of the sixth octave, &c.

The reason why unity is marked F in the ascending scale, and B in the descending scale, is, because, according to the received notation of what is called the natural scale among musicians, F has no fourth in ascending, nor B a fourth in descending. Now it is plain that no aliquot division of a string can give a fourth, or any of its octaves ascending; nor can any multiple of a string give the fourth, or any of its octaves, in descending. For the fourth being expressed by  $\frac{4}{3}$  in ascending, and by  $\frac{3}{4}$  in descending, its octaves will be  $\frac{8}{3}$ ,  $\frac{16}{9}$ ,  $\frac{32}{27}$ , &c. in the first case, and  $\frac{3}{8}$ ,  $\frac{3}{16}$ ,  $\frac{3}{32}$ , &c. in the second case, none of which numbers can be multiples, or submultiples of a given string.

F and B being the given sounds, their octaves will be expressed by F', F'', F''', &c., and B', B'', B''', &c. which are respectively, the first, second, and third octaves, above the F, and below B.

A dot marked over a letter shews that it signifies a sound higher by a comma than the sound expressed by the letter itself. And a dot placed below, denotes the sound to be lowered by a comma. Thus, in the table I find 8r to be A | G, which denotes that A, or the sharp in the seventh octave of F, ascending, is raised a comma; and that G, or the sharp third from B, descending, is lowered by the same interval.

If B in the descending scale be supposed to be a tritonus, that is, two tones major and one tone minor above F of the ascending scale, then will A in one of these scales correspond or be denoted by the same numbers with G in the other scale, and C will correspond to E, but D in the ascending scale will not be expressed by the same numbers as in the descending scale: for in the former, D will be a tone major above C; whereas in the latter, D must by analogy be a tone major below E, and therefore only a tone minor above C, which is the reason why D is in italics in the descending scale.

Mr. Henfling has mentioned the distinction between an ascending and a descending scale in the Miscel. Berolinens. He places unity in the ascending scale in F, as it ought; but in the descending scale he places unity in E, which disturbs the analogy of the two scales.

The trumpet and French horn, not having (commonly) a compass beyond four octaves; and their sounds being formed in a manner analogous to those produced by the division of a string, it follows, that all the true notes of these instruments will be represented by the musical numbers 1, 2, 3, 4, 5, 6, 8, 9, 10, 12, 15, 16, &c. This is a fact well known; and a confirmation of the truth of that theory, which derives all musical proportions from the elements 2, 3, and 5. Phil. Transf. N<sup>o</sup> 195, and N<sup>o</sup> 481. See TRUMPET.

MUSIC, *Chromatic*, *musica chromatica*, among the Italians, is used to express that kind of music in which there are many chromatic signs, as flats or sharps, and intervals, &c. See CHROMATIC.

MUSIC, *Diatonic*. See DIATONIC.

MUSIC, *Didactic*, *musica didactica*, that part of speculative music which only considers the quantity, proportions, and different qualities of sounds.

MUSIC, *Dramatic*, *musica dramatica*, *scenica*, *theatrale*, among the Italians, is used to denote such compositions of music as are particularly made and fitted for theatres. See DRAMATIC and RECITATIVO.

MUSIC, *Enharmonic*. See ENHARMONIC.

MUSICA *Enunciativa*, or *Enarrativa*, is used in much the same sense as *musica signatoria*.

MUSIC, *Figurate*, *musica figuralis*, *figurata*, or *colorata*; figurate music, that in which the notes are of different values, and the motions various, now slow, then quick, &c.

MUSIC, *Harmonic*, *musica harmonica*, among the Italians, is used for pieces consisting of many parts, which, though very different, yet, when played together, make an agreeable whole. This we call music in parts.

MUSIC, *Historical*. See HISTORICAL.

MUSIC, *Hyporchematic*, or *Choraic*, is used by some authors for a sort of music fit for ballads and dancing.

MUSIC, *Instrumental*, is used to denote musical compositions, made to be executed by instruments.

MUSIC, *Melismatic*, or *Melodie*, is used to denote a song, or single part, merely for a voice or for an instrument. Broffard. See MELODY.

MUSIC, *Melopoetic*, is the science or art of ranging and disposing sounds in succession in an agreeable manner; or the art of making melody. See MELODY and MELOPOEIA.

MUSIC, *Measured*, *musica misurata*, among the Italian authors, a kind of music, the notes of which are unequal. It is contrary to *musica piena*, or *chorale*.

MUSIC, *Metabolic*, *musica metabolica*, among the Italians, is properly music transposed, as when the piece goes out of its natural mode into a transposed one, the better to express the words, or to distinguish some change in the action, passion, motion, &c.

MUSIC, *Metric*, *musica metrica*, is used, by Italian authors, to denote the harmonious cadence of the voice, heard when any one declaims, or repeats verses; or it is an air composed to verses.

MUSIC, *Modern*. See ANTE.

MUSIC, *Modulatory*, *musica modulatoria*, among the Italians, that part of music which teaches to compose or modulate, i. e. that fixes rules for the use of modes, and teaches either to sing or play well. See MODE, and MODULATION.

MUSIC, *Odic*, *musica odica*, among the Italians, is the same with *hyporchematic*, or *choraic*.

MUSIC, *Organic*, *musica organica*, among the Italians, is used to denote musical compositions designed to be performed by instruments only.

MUSIC, *Pathetic*, *musica pathetica*, is a moving and affecting kind of music, that causes emotions in the mind, either of love, grief, or pity.

MUSIC, *Poetic*, *musica poetica*, is sometimes used for the art of inventing songs, of modulating concords and discords together agreeably, and making what we call compositions, &c.

MUSIC, *Recitative*, *musica recitativa*, *scenica*, or *dramatica*, a sort of music used in operas, &c. irregular as to time, being a declamation in singing, to express the passions. From its being thus irregular in its time, the Italians often place the phrase *a tempo giusto*, when the recitative ends, and an air, be it minuet, jig, or any other, follows, to shew that the time is then strictly to be observed. See RECITATIVO.

MUSIC, *Rhythmic*, *musica rhythmica*, is used for the harmony or cadence of the words in prose; or a song composed to words in prose.

MUSIC, *Scenic*, the same with *recitative*.

MUSIC, *Signatory*, *musica signatoria*, is used for that part of music which teaches the knowledge of the characters, notes,



notes, figures, pauses, and all other signs and marks whatever, used in music.

MUSICA *Transalpina*, the title given by N. Yonge to a collection of Italian madrigals with English words, published in 1588.

"Musica Transalpina, Madrigales translated of four, five, and sixe Parts, chosen out of divers excellent Authours; with the first and second Part of La Virginella, made by Maister Bird upon two Stanzas of Ariosto, and brought to speak English with the rest." The editor was an Italian merchant, who having opportunities of obtaining from his correspondents the newest and best compositions from the continent, had them frequently performed at his house, for the entertainment of his musical friends.

These being selected from the works of Palestrina, Luca Marenzio, and other celebrated masters on the continent, seem to have given birth to that passion for madrigals which became so prevalent among us afterwards, when the composers of our own nation so happily contributed to gratify it.

The translator of these madrigals, whoever he was, for the editor does not tell us, seems in general to have imitated the original Italian measure and structure of verse, as well as ideas; and though they abound with *concetti*, to which not only Italian poets, but those of all the rest of Europe, were then so much addicted, the general taste of the times was indulged in poetry as well as music, and metre and melody were at once furnished with new models.

In 1597, Yonge published a second collection of madrigals, out of sundry Italian authors; in which, among others, there are three by Croce, three by Luca Marenzio, and six by Ferabosco. The words of these have as little claim to poetical merit as those of the former set.

MUSIC, *Vocal, musica vocalis*, or that composed for the voice, in opposition to organical or instrumental, which is intended to be played on instruments only.

MUSIC-Shell, in *Natural History*, the name of a species of shell-fish of the murex kind, remarkable for its variegations, which consist of several series of spots placed in rows of lines, like the notes of music.

MUSIC, *Academy of*. See ACADEMY.

MUSIC, *Characters in*. See CHARACTERS.

MUSICAL ACCENT. See ACCENT.

MUSICAL *Faculties*. See MUSIC.

MUSICAL *Glasses*. See ARMONICA.

MUSICAL *Instruments* of India, or Indian musical instruments, in the hands of the performers. In *Plate V. Music*, is the representation of a music-gallery over a triumphal arch, through which the Great Mogul passed at Agra or Delhi, before his fall. The procession consisted of the emperor, mounted on an elephant; his wives and concubines, eunuchs, great officers of state, &c. all exquisitely painted. As to the heads of the females, sir Joshua Reynolds and sir Robert Strange, to whom the painting on ivory was shewn, thought each head sufficiently high finished to be set in a ring. This original painting is in the possession of Dr. Burney.

MUSICAL *Modes*. See MODE.

MUSICAL *Notes*. See NOTES.

MUSICAL *Proportion*. See PROPORTION.

MUSICAL *Sound*. See SOUND.

MUSICAL *String*. See STRING.

MUSICALEMENT, *Fr.*, in a musical manner, according to the rules of music.

MUSICIAN, a title given equally to him who composes and to him who performs music. The first is, however, more frequently and more civilly styled *composer*; which see.

Musicians, among the ancients, were poets, philosophers, and orators of the first class. Such were Orpheus, Terpander, Stesichorus, &c. Nor would Boethius honour with the name of musician him who only in a servile manner practised music mechanically with his fingers or voice, but him who possessed the science of music by reason and speculation.

"Muscorum et cantorum  
Magna est distantia,  
Isti dicunt, illi sciunt,  
Quæ componit musica, &c."

"Between a finger and musician  
Wide is the distance and condition:  
The one repeats, the other knows,  
The sounds which harmony compose.  
And he who acts without a plan  
May be defined more beast than man."

Guido has quoted these verses in the Prologue to his "Antiphonarium;" and in his short tract, "De Constitutionibus Musica," he is very severe on the fingers of his time: "Temporibus nostris super omnes fatui sunt cantores."

"And it seems," says Rousseau, "that to mount to elevated expression in oratorical and imitative music, the human passions and the language of nature must have been made a particular study. However, the musicians of our times, bounded for the most part by the practice of notes, and a few passages, will not, it is hoped, be offended, if we should not hold them to be great philosophers."

MUSICKE'S MONUMENT, the title given by Mace to his treatise on the lute. See MACE.

MUSILLIM, or MUSLIM ALI, in *Geography*, a numerous tribe of Arabians on the borders of the Persian gulf, between Omar and Lachsa.

MUSIMON, in *Natural History*, the name of an animal esteemed a species of sheep, described by the ancients as common in Corsica, Sardinia, Barbary, and the north-east parts of Asia. It has been suspected, whether the animal described under this name is now any where to be found in the world; not that it is to be supposed that any species of animal once created is become extinct, but that this probably was a spurious breed between two animals of different species, perhaps the sheep and goat, which, like the mule, not being able to propagate its species, the production of them may have been discontinued.

Belon styles this species of goat, which has large horns bending back, close at their base, distant at their points, with circular rugæ, the *tragelaphus*, from the mixture it seems to have of the goat and deer. Buffon supposes it to be the sheep in a wild state; and as such described by Mr. Pennant. These animals live in the mountains, and run with great swiftness among the rocks. Those of Kamtschatka are so strong that ten men can scarcely hold one; and the horns are so large as sometimes to weigh 30 pounds, and so capacious, that young foxes often shelter themselves in the hollow of such as by accident fall off in the deserts. See OVIS *Ammon*.

MUSIMPOUR, in *Geography*, a town of Hindoostan, in Bahar, near the right bank of the Ganges; 14 miles S.E. of Patna.

MUSITAU, CHARLES, in *Biography*, a physician, was born at Castrovalle, in Calabria, in January 1635. He received his medical education, and took the degree of doctor, at Naples, where he likewise fixed his residence, and obtained considerable reputation as a practitioner. He was honoured



honoured by being elected into the different learned societies of Italy, and by the appointment to a professorship in the university of Naples. He combined the two professions of theology and physic in his own person; and as his success excited the jealousy and rancour of his less fortunate brethren, the asserted indecency of this combination was made a pretext for attempting to interdict him altogether from the practice of medicine. His merits, however, obtained for him the patronage and protection of pope Clement IX., and of cardinal Pignatelli, archbishop of Naples, (and afterwards the sovereign pontiff, under the name of Innocent XII.) who permitted him to hear confessions. He lived in the general esteem of his fellow citizens, and died regretted in 1714, at the age of 97. In his pathological creed, he was a staunch adherent of the chemical sect, and an avowed enemy to Galenism. His descriptions of disease are prolix and obscure; and his hypotheses and practice abound with the errors of the school, to which he was attached. The following is a catalogue of his writings. "Pyretologia, seu de Febris," Naples, 1683. "Del Mal Francese," in four books, 1697. "Chirurgia Theoretico-practica, seu, Trutina Chirurgico-physica," Genev. 1698. "Apologia celeberrimorum Virorum," *ibid.* 1700. "Trutina Medico-physica," *ibid.* 1701. "Mantissa ad Hadriani à Mynsicht Thesaurum et Armamentarium Medico-chymicum," *ibid.* 1701. "De Morbis Mulierum," 1709. These works were published collectively at Geneva, in two vols. 4to. 1701, and in two vols. folio, 1716. The latter edition contained also some other tracts by the author. Eloy *Dict. Hist. de la Med.*

MUSITRAN, in *Geography*, a town of South America, in the province of Tucuman; 42 miles S.E. of Rioja.

MUSIVUM ARGENTUM. See ARGENTUM.

MUSK, MOSCHUS, derived from the Arabic *moscha*, *musk*, whence was formed the common Greek *μοσχος*, *musk*, a kind of perfume of a very strong scent obtained from various animals; only agreeable when moderated by the mixture of some other perfume.

Musk is found in a kind of bag, or tumour, growing about the bigness of a hen's egg under the belly, towards the genital parts of a wild beast of the same name; and appears to be nothing else but a kind of bilious blood there congealed, and almost corrupted. It is formed of a membranous and muscular substance, provided with a sphincter. Many glands are observable within, which separate the tumour.

The animal, which produces it, is pretty common in the kingdom of Bantam, Tonquin, and some others, as Cochinchina, &c. But the most esteemed are those of Tonquin and the kingdom of Thibet. See MOSCHIFERUM *Animal*.

They inhabit the woods and forests, where the natives hunt them down: when the beast is killed, they cut out the bladder under the belly, separate the coagulated blood, and dry it in the sun, where it is reduced into a light friable substance almost of the nature of a powder, and of a dusky reddish colour, and acquires a very strong and disagreeable smell. It is then tied up again in bladders, and exported to other countries; and this is the musk which we use.

The musk itself is dry, with a kind of unctuousity; of a dark reddish-brown, or rusty-blackish colour; in small round grains, with a very few hard black clots; perfectly free from any sandy, or other visible foreign matter. Chewed, and rubbed on paper, it looks bright, yellowish, smooth, and free from grittiness. Laid on a red-hot iron it catches flame, and burns almost entirely away, leaving only an exceeding small quantity of light greyish ashes: if any earthy substances have been mixed with the musk, the

quantity of the residuum will discover them. Genuine musk ought to be consumed totally upon hot coals. From 30 grains of musk, water extracts 12 grains, and spirit of wine ten grains. Spirit of nitre and oil of vitriol totally dissolve it: the former destroys the whole of its smell and the latter the greatest part of it. Spirit of salt, diluted spirit of vitriol, and vinegar, have no effect upon it. Spirit of sal ammoniac dissolves a little of it. Oil of tartar scarcely acquires any tinge from musk, but extricates from it a vitriolic urinous smell. Musk is not soluble in oils expressed or distilled. By distillation in a retort it yields the animal principles, empyreumatic oil, volatile spirit, and salt. In the distillation of odoriferous waters and spirit, a small portion of musk, included in a linen cloth, is generally hung in a still-head, the vapour of both liquors extracting its scent. Spirit, distilled with musk immersed in it, acquires little of its smell; but water by this method acquires both the smell and taste. A minute portion of musk greatly improves the fragrance of the distilled odoriferous waters, as those of lavender and rosemary, and heightens the smell of other odoriferous ingredients, without communicating any of its own peculiar smell. The quantity of liquor, which may be flavoured by macerating a certain known proportion of musk, for a few days, in rectified spirit of wine, appears to be the best criterion of the genuineness and goodness of this commodity; a commodity, which is not only said to vary according to the season of its being taken from the animal, but which is sometimes so artfully sophisticated, that the abuses cannot be discovered by any external characters, or by any other means than the degree of its specific smell and taste, which the above experiment affords the best method of estimating. Neumann and Lewis.

From the result of chemical experiments, musk appears to contain albumen, gelatine, muriate of ammonia, phosphate of soda, and an uncombined acid; but the greater part of it consists of a resin combined with a volatile oil, and a mucilaginous extractive matter.

Musk is in considerable use among the perfumers and confectioners, though much less now than it was formerly. It is supposed to fortify the heart and brain, and is good against deafness, and is now received in general practice in different convulsive disorders; and its dose has been increased with advantage to a scruple and half a drachm, every four or six hours.

Musk and other perfumes of the same tribe, have been long celebrated as antispasmodics, but were formerly ordered in such small quantities as to have little effect. Practitioners thought four or five grains a large dose. But the Chinese have taught us to be more bold; the tenth part of an ounce is a usual dose among them. The remedy in the East for the bite of the mad dog contains 16 grains of musk, and this they repeat frequently.

The effects of musk are ease from pain, quiet sleep, and a copious diaphoresis. Hence it has been found of great use in spasmodic disorders, petechial, malignant, putrid fevers, the gaol distemper, hiccoughs, subsultus tendinum, &c. For the particular cases, we refer to the Philosophical Transactions, N<sup>o</sup> 474. § 18. and vol. xlv. p. 75, &c. Instances occur in which it has been of very great benefit in convulsive disorders, in the London Med. Obs. &c. vol. iii. art. 21. 31.

It has also been found useful in spasmodic disorders given by way of clyster, as Dr. Wall observes, in that Transaction. The operation of musk, in some respects, resembles that of opium; but is in this much preferable, that it does not leave behind it any stupor or languidness, which the latter often does. Musk, therefore, seems likely to answer in



those low cafes where sleep is much wanted, and opiates are improper.

It is said to be best given in a bolus, and that those, who are most averse to perfumes, may take it in that form without inconvenience. For as Etmuller and others have long ago observed, the smell of the perfume is often found to be of disservice, where the substance inwardly taken produces good effects.

It is pity, that a medicine of this consequence should be so liable to adulterations, and that the criteria of its genuineness are ill settled.

In a paper read before the Royal Society, March 17, 1747—8, several cures performed by musk, on distempered cows, were mentioned.

When musk begins to decay, it is a practice used in the East Indies to put it into a bladder or bag, in which many small holes are made with a needle, and hang it in a necessary-house, but not low enough to touch the filth. Others keep it wrapped up in linen, well moistened with rank urine.

Mr. Boyle says, of his own knowledge, that musk has greatly contributed to the preservation of flesh. Works, abr. vol. i. p. 30.

MUSK-*Ant.* See ANT.

MUSK-*Boar*, in *Zoology*. See TAJACU.

MUSK-*Hyacinth*. See HYACINTH.

MUSK-*Insect*. See INSECT.

MUSK-*Julep*. See JULEP.

MUSK-*Mixture*. See MIXTURE.

MUSK-*Rat*. See RAT.

MUSK-*Seed*, in the *Materia Medica*, the name of the seed of the *alcea Egyptiaca villosa*; or hoary Egyptian vervain mallow. See SYRIAN MALLOW.

It is a small seed of about the bigness of a pin's head, of a greyish-brown in colour, and of the shape of a kidney, and when fresh it has a perfumed smell. It is brought into Europe from Egypt, and from Martinico. The Egyptians use it internally as a cordial and provocative; but in Europe it is of very little use, being wholly neglected in medicine; but the perfumers in France and Italy use it among their compositions.

MUSKERRY, in *Geography*, a barony in the county of Cork, Ireland, the chief town of which is Macrump. It is situated on the river Sullane, and is in the new road from Cork to Killarney. Its castle is very ancient, having been built in the reign of king John; but having been much injured by fire in 1641, it was altered into a more modern structure by the earls of Clancarty; 141 miles S.W. from Dublin, and W. from Cork.

MUSKET, or MUSQUET, properly a fire-arm borne on the shoulder, and used in war; to be fired by the application of a lighted match.

The length of the musket is fixed to three feet eight inches from the muzzle to the touch-pan, and its bore is to be such as may receive a bullet of 14 in a pound, and its diameter differs not above  $\frac{1}{3}$ th part from that of the bullet.

Muskets were anciently borne in the field by the infantry, and were used in England so lately as the beginning of the civil wars. They are said to have been first invented in the year 1520 or 1521.

The Spaniards in the time of Philip II. caused muskets to be made of a very great calibre, and such that a strong and vigorous foot-soldier might carry them: but they were so heavy, that they could not be presented, without the assistance of slaves shod and pointed at the bottom, and which they fixed into the earth, making use of a fork that was at

the top, as a prop to sustain the end of the musket: of these they made use, not only in sieges to fire over the walls, but also in battles: these large muskets carried to a great distance, and by the size of their balls inflicted dreadful wounds: but on account of their weight, they left off using them in the field, and restricted them to sieges. The considerable execution done by pieces of small calibre probably caused the introduction of the musket, which was a long, heavy piece, carrying large balls, and on account of its size and weight fired on a kind of fork, called a rest: the rest continued in use for a considerable time; but on certain occasions, being found unwieldy and inconvenient, a lighter kind of piece was introduced, generally known by the name of the caliver, which was fired without any such assistance. This caliver was a lighter kind of matchlock piece, between a harquebuse and a musket, and fired without a rest. But before the entire dismissal of the rest, divers attempts were made to convert it to a defence against cavalry, whilst the musketeer was loading, by arming it with a projecting spike from one of the prongs of the fork, serving for the head, or part on which the musket was laid; or by enclosing a tuck in the shaft of the rest, which, on opening a small valve, sprung out: rests thus armed were called the Swines or Swedish feathers, and were contrivances preceding the use of the bayonet. At present muskets are little used, except in the defence of places; fuseses, and fire-locks, having taken their place and name.

From an ingenious military treatise, entitled "English Military Discipline," and printed in 1680, we learn that the fusil or firelock was then in use in our army, especially among the fusileers and grenadiers; and probably the appellation of fusileers was given to those troops that were armed with fusils. Perhaps the fusileer regiments were originally a sort of grenadiers, as like them they wear caps, and have no ensigns. Fusileers are foot-soldiers armed with fuseses with slings to sling them. There are four regiments in our army, which have always been called fusileers, and pass under the name of English, Scotch, Irish, and Welsh fusileers: but now we have none but fusileers abroad, for the pikes are quite laid aside. The first design of fusileers was to guard the artillery, to which end the regiment of fusileers, commanded by sir Charles O'Hara, was first raised. To supply the want of pikes, and to secure themselves against horse, the fusileers used to carry turnpikes along with them, which in a camp were placed along the front of a battalion, and on a march were carried by the soldiers, each carrying one of the short pikes, and two, by turns, the sparr through which they are thrust, so that they were quickly put together. According to Millan's succession of colonels, the 7th regiment, or royal English fusileers, were raised June 11th, 1685; the 21st regiment, or royal North British fusileers, 23d September, 1679; the 23d, or royal Welsh fusileers, 17th March, 1688; but there is no Irish regiment bearing the appellation of fusileers. (See FUSILEER.) The use of cartridges, which seems to have taken place about the same time as the firelock, introduced the cartridge-box instead of the bandoleers, which is a great improvement, both with respect to the more commodious carriage of the ammunition, and also the quickness of firing, as the soldier may fire at least three times the number of shot which he could discharge when loading from his bandoleers.

MUSKET-*Baskets*, in *Fortification*. See BASKETS.

MUSKETEERS, soldiers armed with muskets; which were formerly fired with matchlocks.

Musketeers of the reign of James and Charles I. carried their powder in little wooden, tin, or leather cylindrical boxes, each containing one charge. Twelve of these fixed



to a belt worn over the left shoulder were called *bandeleers*; a contrivance which seems to have been borrowed from the Dutch or Walloons. See *MATCH*.

**MUSKETOON**, a musket shorter, though thicker, than the ordinary musket. It is fired by the collision of a steel and flint in the lock: whereas the musket is fired by a match. Its bore is a thirty-eighth part of its length, and carries five ounces of iron, or seven and a half of lead, with an equal quantity of powder. This is the shortest sort of blunderbusses. See *FIRE-lock*.

**MUSKINGUM**, an Indian name denoting the "Elk's eye," in *Geography*, a county of the state of Ohio, bounded N. on the Indian boundary and Columbiana, S. on Washington, E. on Columbiana, Jefferson, and Belmont; and W. on Fairfield.—Also, a large river of the state of Ohio, the principal branch of which, called the "Tascarawa," rises from a small lake near the head-waters of the Cayahoga, a boatable river emptying into lake Erie, with a portage of  $7\frac{1}{2}$  miles between the two rivers. After pursuing its course in a gentle current, without much overflowing its high banks, it falls into the Ohio, 181 miles below Pittsburg, as the river runs, and is 250 yards wide at its mouth. This river is supplied by a variety of considerable streams, which, when the waters are high, extend the navigation in various directions into the interior of the country. This river also forms a communication with the lakes, which will in time become very serviceable to the growing settlements on its fertile banks. The plains and hills bordering on the river and its various branches are represented as being of superior quality to any in the state. Near it are some productive and valuable salt-springs; and its banks, in some places, contain immense beds of pit-coal, and in others, a variety of ochres and pigments. The river abounds with fish, of which the yellow cat and sturgeon are the most esteemed. Harris's Tour 1805.

**MUSKOGEE**. See *CREEKS*.

**MUSKONGUS**, a small river of America, which springs from ponds in the town of Maine, in the county of Lincoln and state of Maine, and enters the sea, after a course of about 20 miles, through the adjoining town of Weldeborough.

**MUSKONGUS Bay**, a bay formed by Bristol or Pemiquid point on the W. and Meduncook plantation on the E. In this bay is an island of the same name, containing about 1000 acres. This Indian name is also applied to a grant or claim of land called "Muskongus Patent."

**MUSLIN**, or **MUSSLIN**, a fine sort of cloth, wholly cotton; so called as not being bare, but having a downy knap on its surface resembling moss, which the French called *moisse*.

There are various kinds of muslins brought from the East Indies, chiefly from Bengal; betelles, tarnatans, mulmuls, tajeeds, terrindams, doreas, &c.

Jaconott, or jacconett, is a species of muslin of fabric between the *coffac* and *mulmul*, being lighter and thinner than the former, and stouter than the latter. The name is said to be a corruption of *Jaghernout*, the district in India where muslins of this description are chiefly made. The *jaconott* is perhaps the most universal fabric of the lighter descriptions of muslin, being more showy and open than the *coffacs*, long-cloths, or cotton cambrics, and more durable than the *mulls* and *bukes*. It is also from this quality the best fitted for the ornamental figures of tambour and needle-work, the lighter fabrics, although very beautiful when well executed, being too flimsy to bear the fatigue of washing, dressing, or clearing often, when loaded with needle-work of any kind, and the opacity of the stouter fabrics diminishing very sensi-

bly both the show and beauty of the work. *Jaconott* muslins are, therefore, made in great abundance both in England and Scotland. In England, besides those which are worn plain, a very great number is used for the finer kinds of printed goods, both as garments and shawls. In Scotland, besides plain wearing and printing, they are employed for the needle-work of various kinds, of which that country is the chief seat of manufacture. The Scotch *jaconotts* are in general made considerably lighter in the fabric than those of England, and this is very proper when the different uses to which they are generally applied are taken into consideration. A very great proportion of the *jaconotts* made in England are either worn plain or used for printing; in both these cases a close stout fabric is most economical, and in the latter the colours will appear with more brilliancy and effect when there is a close body to receive and absorb the colour in considerable quantity. In every species of needle-work, on the contrary, the lightness and transparency of the fabric forming a contrast with the close appearance of the work, gives it a degree of what painters call relief, which greatly heightens its appearance.

**MUSMURREAH**, in *Geography*, a town of Hindoostan, in the circar of Gohud; 10 miles W. of Calpy.

**MUSNIKI**, a town of Lithuania, in the palatinate of Wilna; 14 miles S. of Wilkomierz.

**MUSO**, a town of South America, in the viceroyalty of New Granada; 70 miles N. of Santa Fé de Bogota.

**MUSOLENTE**, a town of Italy, in the Trevigan; 9 miles S.E. of Cismone.

**MUSONE**, a river of Italy, which runs into the Adriatic, at a small distance N.E. of Loreto.

**MUSONIUS**, in *Biography*, ranked by Eunapius as one of the most virtuous and excellent of the modern Cynics, a Babylonian by birth, flourished in the second century of the Christian era. He was an excellent philosopher; and Philostratus speaks of him as next to Apollonius in wisdom. He was at Rome during the reign of the emperor Nero, where, by animadverting on the vices of the court, he excited the resentment of the tyrant, and was committed to prison. His confinement was, probably, not very severe, as he was enabled, during its period, to contract a friendship with Apollonius, and to enter into a correspondence with him. He was, however, at last banished into the isthmus of Greece, and condemned to daily labour with the spade, in a state of slavery. While he was in this condition, he was visited by Demetrius of Corinth, who deplored the unworthy treatment to which he was subject; upon which Musonius, striking his spade firmly in the ground, exclaimed, "why do you lament to see me digging in the isthmus? You might, indeed, have just cause for lamentation, if you saw me, like Nero, playing on the harp." Julian speaks with applause of the magnanimity of this philosopher. The time of his death is uncertain, and none of his writings have come down to us. Enfield Hist. Phil. vol. ii.

**MUSONIUS, CAIUS**, surnamed *Rufus*, a Stoic philosopher, a Tuscan by birth, of the equestrian order, who enjoyed military honours. He took much pains to disseminate the principles of his philosophy, and the precepts of sound morality among the Roman youth, particularly among the officers of the army. On this account, he excited the ridicule of some, while he gave offence to others. He likewise incurred the displeasure of Nero, probably because he had the virtue to speak the truth respecting that sovereign, and truth being then, as it is now, regarded as a heinous offence, though intended to correct the manners of the age, the philosopher was banished. A more virtuous prince, Vespasian, recalled Musonius, and took him into his favour.

His



His philosophy, like that of Socrates, was adapted to the practical purposes of life and manners, as has been inferred from a dissertation which he left, "On the Exercise of the Mind," which is preserved in Stobæus' Collection. Moreri. Enfield Hist. Phil.

MUSQUABASTON LAKE, in *Geography*, a lake of Canada. N. lat.  $51^{\circ}40'$ . W. long.  $87^{\circ}30'$ .

MUSQUAKIES, Indians who inhabit the southern shore of lake Michigan, having, some few years ago, 200 warriors.

MUSQUATONS, Indians inhabiting the vicinity of lake Michigan.

MUSQUETEERS, MOUSQUETAIRES, in France, are troopers who fight sometimes on foot, sometimes on horseback: they are gentlemen of good families, and are divided into two troops, the one called the grey musqueteers, the other the black musqueteers, from the colour of their horses.

MUSQUETOES, in *Entomology*. See CULEX.

MUSQUITO RIVER and BAY, in *Geography*, lie at a small distance N. of cape Canaveral, on the coast of East Florida. The banks of the river towards the continent abound in trees and plants common to Florida, with orange groves; but towards the sea the narrow strips of land are mostly sand hills.

MUSQUITONS, Indians in the vicinity of the 'Outtagomies'; which see.

MUSSA, MORA. See MOOR.

MUSSÆNDA, in *Botany*, the vernacular name of the original species in the island of Ceylon, which, though of barbarous origin, has obtained universal suffrage, perhaps *euphonia gratia*. Herm. Zeyl. 36. Linn. Gen. 96. Schreb. 130. Willd. Sp. Pl. v. 1. 997. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 372. Juss. 200. Lamarck Dict. v. 4. 391. Illustr. t. 157. Gært. t. 28.—Clafs and order, *Pentandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juss.

Gen. Ch. *Cal.* Perianth superior, in five deep, taper-pointed, deciduous segments. *Cor.* of one petal, funnel-shaped; tube long, cylindrical, more or less hairy; limb flat, in five deep, ovate, acute, equal segments. *Stam.* Filaments five, very short, inserted into the tube; anthers awl-shaped, long and narrow, concealed within the tube. *Pist.* Germen inferior, ovate; style thread-shaped; stigmas two, simple. *Peric.* Berry ovate, of two cells, crowned with a margin. *Seeds* very numerous, minute, dotted, disposed in four series, on cloven receptacles.

Eff. Ch. Corolla funnel-shaped, externally hairy. Stigmas two, simple. Berry ovate, inferior. Seeds disposed in four series, dotted.

1. *M. frondosa*. Hairy Leafy Mussænda. Linn. Sp. Pl. 251. (*M. formosa*, by mistake; Linn. Mant. 338. *M. zeylanica*, flore rubro, fructu oblongo polyspermo, folio ex floribus thyrsis prodeunte albo; Herm. Zeyl. 165. t. 76.)—Calyx-teeth linear, half as long as the tube of the corolla, one of them often frondose. Hairs of the corolla spreading.—Native of Ceylon, and other parts of the East Indies. We have a specimen gathered by the Moravian missionaries at Tranquebar. *Stem* shrubby, with round hairy branches. *Leaves* opposite, on shortish hairy footstalks, ovate or elliptical, two or three inches long and one broad, with a small, narrow, taper point; entire, but slightly wavy, at the margin; furnished with a mid-rib, and numerous transverse, curved, parallel veins; more or less hairy on both sides, especially the rib and veins; paler beneath. *Stipulas* between the footstalks, simple, hairy, broad at the base, with a taper point. *Panicle* terminal, forked, corymbose, hairy, especially

at the forks. *Bractææ* small, opposite at each division of the panicle, very hairy. *Flowers* erect. *Germen* obovate, clothed with scattered hairs. Segments of the *calyx* upright, half as long as the full-grown tube of the corolla, linear, taper-pointed, very narrow, hairy externally, smooth within; one of them, in two or three of the first flowers, transformed into an elegant white long-stalked leaf, of the shape of the proper foliage, but rather larger, and having its principal veins or ribs springing chiefly from the base; its margin and veins hairy. Tube of the *corolla* above an inch long, gradually swelling upwards, densely clothed in every part with longish lax hairs; limb three quarters of an inch broad, horizontal, or rather deflexed, externally downy or hairy, internally, in our dried specimen, of a rich orange colour, granulated or glandular, with a dense pale-yellow tuft about the mouth of the tube, its segments abrupt, each tipped with a small taper point.

We have been particular in the description of this plant, which seems rare and but little known, though it appears to be the original *M. frondosa* of Linnæus, who in his synonyms confounded with it the following, which is what most authors mistake for it. Burmann's figure is characteristic, and the only one that accords with our specimen.

2. *M. glabra*. Smoothish Leafy Mussænda. Vahl. Symb. v. 3. 38. Willd. n. 2. (*M. frondosa*; Lamarck Dict. v. 4. 395. t. 157. f. 1. *Folium principissæ*; Rumph. Amb. v. 4. book 6. 111. t. 51. *Belilla*; Rheede Malab. v. 2. 27. t. 18.)—Calyx-teeth ovato-lanceolate, unequal, many times shorter than the tube of the corolla, one of them often frondose. Hairs of the corolla erect.—Native of various parts of the East Indies. The Malays call it *Daun putri*, and a specimen so named is preserved, as *M. frondosa*, in the Linnæan herbarium; but this specimen is of later date than the publication of the *Species Plantarum*. The present species is much smoother in its branches, leaves, and stalks, than the foregoing, and the panicles appear to be more numerous or aggregate. The *germen* is more ribbed or angular. Segments of the *calyx* widely different, being unequal, spreading, scarcely a fifth part so long as the tube of the flower, broad at the base, and suddenly tapering to a blunt point. Tube of the *corolla* an inch long, clothed, principally in the upper part, with erect or close hairs; limb one-third the size of the former, moderately spreading, downy, described by Rumphius as deep yellow. The leaf which is sometimes produced by the *calyx* instead of a fifth tooth, is of a broader and shorter figure than in *M. frondosa*. The second or narrow-leaved species of Rumphius, probably a mere variety, best answers to our plant. The synonym of Rheede belongs either to this, or to a third species, certainly not to the first, if the calyx be faithfully drawn. The flowers are there described as of a beautiful scarlet.

3. *M. pubescens*. Chinese Mussænda. Dryandr. in Ait. Hort. Kew. ed. 2. v. 1. 372.—"Branches and leaves downy. Tube of the corolla many times longer than the segments of the calyx."—Native of China. Brought in 1805 to Kew, where it is kept in the greenhouse, flowering from May to September. We know nothing more of this species, which seems most akin to the last, though more downy.

4. *M. arcuata*. Jasmine-flowered Mussænda. Poiret in Lamarck Dict. n. 1. (*Landia stelligera*; Commerf. MSS.)—Leaves elliptical, smooth. Calyx-teeth linear, nearly equal. Limb of the corolla externally smooth; tube with five hairy lines.—Native of the island of Mauritius. Lam. Commerf. met with it cultivated in the gardens of Java. This is a nearly smooth shrub, with elliptical, pointed, shining leaves. Panicle smooth, forked. Flowers fragrant, resembling



bling some of the larger species of *Jasminum*, described by Commerſon as white, with a yellow eye; in a dried ſtate the *limb* is entirely yellow, ſmooth externally, but glandular on the upper ſide, with five hairy, radiating ſtarry points; tube ſmooth on the outſide, except five hairy lines. Segments of the *calyx* linear, ſmooth, a little recurved, not one-fifth ſo long as the tube, ſomewhat unequal, but it does not appear that any of them, in this or the remaining ſpecies, is ever transformed into a leaf. *Fruit* obovate, ſmooth, the ſize of a ſmall goosberry. An aſcending curvature in the baſe of the *flower-ſtalks* gave occaſion to the ſpecific name.—This plant was called *Landia ſtelligera* by Commerſon, in compliment to his friend De la Lande, the aſtronomer, who had no pretenſions to botanical honours. The *flowers* in Lamarck's t. 157. f. 2, are moſt like this ſpecies in their limb and its dimensions, though done for the following, with which their *calyx*, all the diſſected parts, and the leaves agree.

5. *M. Landia*. Broad-leaved Muſſænda. Lam. n. 2. Illuſtr. t. 157. f. 2.—Leaves broad-ovate, ſmooth, with hairy ribs. *Calyx*-teeth ovate, with long recurved points. *Corolla* externally filky; internally downy; its ſegments taper-pointed.—Native of the iſles of Mauritius and Bourbon. The *leaves* are of a broad or roundiſh ovate form, entire, ſmooth or nearly ſo, with hairy veins, their dimensions ſometimes eight inches by four. *Footſtalks*, *flower-ſtalks*, and *germen* clothed with ſcattered cloſe-preſſed hairs. *Stipulas* cloven, hairy in the ſame manner. Segments of the *calyx* more denſely hairy, ovate, with a long recurved point of their own length. *Corolla* probably white; its tube above an inch long, being four or five times the length of the *calyx*, denſely clothed with cloſe filky hairs; ſegments of the limb an inch long, ovate, with long taper points, their outſide filky, inner finely downy, with an elevated central line; throat lined with ſoft hairs. *Style* brifſly.—The *flowers* in Lamarck's figure are too ſmall, and the tube in the ſeparate *corolla* is ſcarcely long enough; nor the ſegments ſufficiently pointed.

6. *M. holoſericea*. Silky Muſſænda.—Leaves ovate, pointed, filky beneath. *Calyx*-teeth ovate, acute, ſtraight. *Corolla* externally filky, internally downy, its ſegments taper-pointed.—Gathered by Commerſon in the iſle of Bourbon. This is the plant alluded to in Lamarck, under the deſcription of the laſt. We are at a loſs to account for his being poſſeſſed of a few detached flowers only, when there are magnificent ſpecimens from Commerſon in the herbarium of the younger Linnæus. The *leaves* are ovate, about four inches or more in length, tapering into a long ſharp point; their upper ſurface clothed with minute, depreſſed, ſcattered hairs; the under finely filky; ribs and numerous veins on both ſides hairy. *Stipulas* hairy, in two deep, narrow, taper-pointed diviſions. *Footſtalks*, *flower-ſtalks*, *bracteas*, and young *branches*, finely filky. *Germen*, *calyx*, and tube of the *corolla*, more denſely covered with rather longer hairs. *Panicle* forked, corymboſe, many-flowered. Segments of the *calyx* ſhorter, and much broader, than in the laſt, acute, but not taper-pointed, nor recurved. *Corolla* ſaid to be white; its tube two inches long, ſegments of the limb one inch, taper-pointed, hairy at their backs, finely downy at the margins, as well as on the upper ſide; round the mouth are five apparently reddiſh ſpots, fringed with long radiating hairs. *Style* brifſly. This is a very handſome ſhrub, not unlike ſome of the fineſt ſpecies of *Gardenia*.

7. *M. lanceolata*. Lanceolate Muſſænda. Lam. n. 3.—“Leaves lanceolate-wedge-shaped. Flowers oppoſite, racemose. *Calyx* abrupt, with five ſmall teeth.”—Native of

the iſland of Mauritius.—We have from that country a ſpecimen partly anſwering to the deſcription in Lamarck, but we dare not take it for the ſame plant. The *corolla* is deſcribed as ſmooth, and the *infloreſcence* as racemose, neither of which characters have occurred to our obſervation in any true *Muſſænda*.

8. *M. citrifolia*. Citron-leaved Muſſænda. Lam. n. 4.—“Leaves three in a whorl, ovate, nearly ſeſſile. *Calyx*-teeth long and permanent.”—Native of Madagaſcar, where it is called *charro*. The *corolla* of this is ſaid to be ſmooth, and the *fruit* a dry *capſule*, both circumſtances adverſe to the generic character. The *flowers* are deſcribed as cymose, ſmall, yellow, and very numerous. *Leaves* coriaceous; ſmooth and ſhining above; ſlightly downy beneath.

9. *M. longifolia*. Long-leaved Muſſænda. Lam. n. 5.—“Leaves three in a whorl, crowded, lanceolate or oblong. *Capſule* ribbed, crowned with the *calyx*.”—Native of Madagaſcar, where it is called *tamba-racha*. Said to reſemble the laſt, except that its *leaves* are narrower, and twice or thrice as long. *Capſule* pear-shaped, membranous, with ſix or eight longitudinal ribs.

10. *M. glomerulata*. Tufted-flowered Muſſænda. Lam. n. 6.—“Leaves ovate, acute. Flowers terminal, in denſe round heads.”—Gathered by Richard in Guiana. The habit is ſaid to reſemble the *Tachia*, in Aublet's t. 29, but the *infloreſcence*, by the above character, is totally diſſimilar. *Corolla* ſlightly downy at the outſide.

Poirer, who deſcribed the laſt, ſeems to have been doubtful of its genus; and though Lamarck himſelf determined the two immediately preceding, it is manifeſt that they have not the characters of *Muſſænda*, at leaſt as we underſtand the genus. We have ſeen no certain ſpecimens of any of theſe four laſt, and therefore inſert them here merely for future enquiry, as they are not in Willdenow.

*M. ſpinofa* and *formoſa*, Linn. Mant. 45. Jacq. Amer. t. 49 and 48, are now referred to *Gardenia*. S.

MUSSAHIR, in *Ornithology*, a bird mentioned by Arabian writers. It is ſaid that this creature, after having employed the day in ſeeking its food, ſpends the whole night in ſinging; its notes are ſaid to be ſo melodious as to baniſh all thoughts of ſleep from thoſe that hear them.

MUSSALEE, in *Geography*, a town of Hindooſtan, in the Carnatic; 16 miles W.N.W. of Trichinopoly.

MUSSAON, a town of Hindooſtan, in Baglana; 33 miles S. of Damacen.

MUSSARA, a town of Bengal; 50 miles N.W. of Midnapour.

MUSSATO, ALBERTINO, in *Biography*. See ALBERTINO.

MUSSAXO COSA, in *Geography*, a town of Aſiatic Turkey, in the province of Diarbekir; 40 miles S.W. of Tecri.

MUSSCHENBROECK, PETER DE, in *Biography*, an eminent mathematician and natural philoſopher, was born at Leyden in 1692. He became profeſſor of mathematics and natural philoſophy at his native place, in which departments he greatly diſtinguiſhed himſelf. He was elected a member of the Royal Society of London, and alſo of the Academy of Sciences at Paris. He died in 1761. His *Course of Natural and Experimental Philoſophy* is a very valuable work, and has been popular in this country. Muſſchenbroeck was author of “*Tentamina Experimentorum*,” “*Inſtitutiones Phyſicæ*,” and “*Compendium Phyſicæ Experimentalis*.”

MUSSELBURGH, in *Geography*, a ſea-port town and borough, ſituated on the ſouthern coaſt of the Firth of Forth, in the county of Midlothian, Scotland, derived its name from an



## MUSSELBURGH.

extensive muscle-bank, which lies in the sea below the town, and was probably the cause of its early population. This place may be said to consist of three villages. On the east side of the river Esk, and near to the shore, stands Musselburgh, properly so called, consisting of a broad well paved street, with some adjoining lanes. The houses here are mostly two or three stories high, and are all built of stone, and covered with slate or tiles. Above Musselburgh, more inland, but connected with it by detached houses, is the village and church of Inveresk, which gives name to the parish; and along the shore, on the western bank of the Esk, is the village of Fisherrow. This last is upwards of half a mile in length; and here the only port or harbour belonging to the town is situated.

Musselburgh is not a royal borough, but what is called a borough of regality; that is, an incorporation in which a subject, vested with regal privileges, is the superior. Previous to the reformation, the abbot of Dunfermline was the lord of regality. It afterwards became the property of the family of Lauderdale, and continued in their possession till the year 1709, when it was purchased by the dukes of Monmouth and Buccleugh. Accordingly, the borough now holds of her descendant, the present duke of Buccleugh, as superior lord, and pays to him certain sums annually in name of quit rent, or pew duty. The government is vested in a council of eighteen members, ten of whom are chosen for Musselburgh, and eight for Fisherrow. These elect their own successors, and also nominate from among themselves two bailies and a treasurer. The bailies, by virtue of their charters, of which the oldest extant is dated in 1563, are empowered to hold a court of record, and to issue precepts for the execution of their decrees, and of contracts registered in their books; but enfeoffments of property must be recorded in the county register. Upon the whole, however, this borough possesses all the immunities of any royal borough in Scotland, except those of voting for a member of parliament, and sending a delegate to the convention of boroughs. Its annual revenue is estimated at somewhat more than 1500*l.* arising from the few duties paid by all proprietors of houses within their territories, and from their land and mills, and the shores of their harbour. These last have of late years considerably increased, in consequence of the great resort of shipping with grain for the Clements-Well distillery. It is not a little remarkable, that this town, though excellently situated for the purpose, carries on no extensive manufacture. Some small manufactories, however, of cloths, soap, starch, and pottery, have been established, and all sorts of ordinary tradesmen are to be found here as in any country villages. In Fisherrow are a number of salt-works, but all upon a very trifling scale, their whole produce being either sold to dealers in the neighbourhood, or carried by the women in creels to Edinburgh, where they generally dispose of it, by crying it about the streets in the same way as fish are by fish-women. Of the latter a great number likewise belong to this town, who still retain the same character and manners which distinguished them a century ago. They are the wives and daughters of fishermen, who generally marry in their own cast or tribe. On the days not occupied in carrying, their business is to gather baits for their husbands, fathers, or brothers, and to bait their lines. In their dealings with the public, they still pertinaciously retain the ancient practice of small traders, of demanding three times the sum they will take for their goods. This, however, is not the result of a dishonest principle, but merely of custom, for it is remarked by those who have studied their character, that in all other transactions they are strictly honest; and that though scan-

dalous to a proverb in their language, they are nevertheless virtuous and chaste in their persons. From the active share these women have in the maintenance of their families, their sway in them, as might be supposed, is great. As their work is masculine, so are their sentiments and manners. Their strength is not inferior to that of their husbands, nor are they less capable than they of enduring fatigue, or the severities of a northern climate. On holidays, their chief amusement is playing at golf, and on Shrove Tuesday there is always a standing match, at foot-ball, between the married and unmarried women, in which the former are generally the winners. This match usually takes place on the "links," or open downs, lying between Musselburgh Proper and the shore, where are likewise held the annual fair, and the horse races.

Musselburgh contains four places appropriated to public worship; the parish church, the episcopal meeting-house, a burgher's seceding meeting-house, and a church of relief. The duke of Buccleugh is patron of the established church. Here is also an excellent grammar-school, under the patronage of the magistrates and town council, who allow the master a salary of 28*l. per annum*, in addition to the fees he receives from his pupils, which in the aggregate are pretty considerable. Several private seminaries in this town are likewise in high estimation, and there are Sunday-schools supported by the dukes of Buccleugh, and other charitable ladies, both in Musselburgh and Fisherrow. The market day in the former is Friday, and in the latter Tuesday.

In this town and its neighbourhood, many Roman remains have been discovered at different times; which Chalmers, in his *Caledonia*, says, "shew that the Romans had a post at Fisherrow, and a post at Inveresk." Some Roman coins, and an altar with this inscription, *Apolloni Gratio*, were found in levelling the adjacent grounds several centuries ago, and within these last twenty years, the ruins of a Roman bath were laid open by the workmen employed to erect a new parterre to the mansion of the proprietor of Inveresk villa. Similar ruins of hypocausta have been since discovered nearer to the shore, besides many foundations of private houses.

The church of Inveresk has been lately rebuilt, and is said to be one of the finest parish churches in Scotland. The old structure, however, was more interesting as an object of curiosity; its antiquity having been undoubtedly very remote. At the east end of Musselburgh formerly stood the chapel of Loretto, a cell to the abbey of Dunfermline. Of this building there are very few remains, except one small apartment covered by an artificial mound in a garden of a villa still called the Loretto. It must, however, have been an edifice of very considerable extent, as the present tollbooth of Musselburgh was wholly built from its materials. Near the east end of the town is the house in which the great Randolph, earl of Murray, died in 1332. Among the other remains of antiquity in this town, the bridge is the most remarkable, being, according to Dr. Carlisle, most probably a work of the Romans. The Scottish army passed over this bridge on the day of the fatal battle of Pinkie, which was fought near the house so called, formerly the residence of the Setons, earls of Dunfermline. Carberry hill, immediately adjoining to the scene of action, was afterwards noted for the conference held by the unfortunate queen Mary with Kirkcaldy of Grange, which terminated in placing her person in the power of Morton, and the confederate lords, who, regardless of their renewed oaths of allegiance and fidelity, confined her a prisoner till she was enabled to effect her escape from Lochleven castle.

The



The situation of the parish of Inveresk is one of the most beautiful in Scotland; and so celebrated is the village for its healthy climature, and the delightful prospects it commands, that it was distinguished of old by the name of the Montpellier of Scotland. Musselburgh, as a fashionable summer retreat, however, is now comparatively abandoned for Portobello, situated between it and the metropolis, where large and commodious baths have been lately erected. The site of this now populous village, only a few years ago was a desert and barren heath.

According to the parliamentary returns of 1801, this parish contained 1469 houses, and 6604 inhabitants. Sinclair's Statistical Account of Scotland, vol. xvi. Chalmers's Caledonia, vol. i. 4to.

MUSSIDAN, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Ribérac. The place contains 1176, and the canton 6454 inhabitants, on a territory of 140 kilometres, in 10 communes.

MUSSIN, a town of the duchy of Warsaw; 10 miles S. of Posen.

MUSSINIA, in *Botany*, dedicated, by Willdenow, to the honour of the Russian count Muffin Puskin, who undertook an arduous expedition to the Caucasus in pursuit of botany, and in which he discovered many new plants. This genus consists of several species referred by Thunberg to *Gorteria*. Willd. Sp. Pl. v. 3. 2263.—Class and order, *Syngenesia Polygamia Frustranea*. Nat. Ord. *Compositæ Capitata*, Linn. *Corymbifera*, Juss.

Gen. Ch. Common calyx of one leaf, cylindrical, naked, toothed in the margin. Cor. compound, radiated. Florets of the disk numerous, perfect, with a funnel-shaped five-cleft corolla; those of the radius fewer, female, with a ligulate lanceolate one. Stam. (in the perfect florets only) Filaments five, short; anthers united into a cylindrical tube. Pist. (of the perfect florets) Germen hairy; style thread-shaped, the length of its own little corolla; stigma cloven. In the female florets, the germen is obsolete and abortive; style none; stigma none. Peric. none, except the calyx, falling off entire. Seeds to the perfect florets only, solitary, roundish. Down simple. Recept. villous.

Eff. Ch. Receptacle villous. Down simple, composed of hairs. Florets of the radius ligulate. Calyx of one leaf, cylindrical, toothed.

1. *M. linearis*. Willd. (*Gorteria linearis*; Thunb. Prodr. 162. Act. Soc. Nat. Scrut. Haf. v. 4. 2. t. 1.)—Leaves linear, smooth, with fringed teeth at the base. Stalk single-flowered. This, as well as all the following species, are natives of the Cape of Good Hope.—Leaves pointed. Flower-stalk longer than the leaves. Calyx-teeth linear-awl-shaped, very long, fringed at the bottom.

2. *M. uniflora*. Willd. (*Gorteria uniflora*; Linn. Suppl. 382. Thunb. Prodr. 162. Act. Soc. Nat. Scrut. Haf. v. 4. 3. t. 3.)—Leaves oblong-spatulate, entire, downy beneath. Stem decumbent. Stalks single-flowered. Linnæus suspected this to be a variety of *Gorteria rigens*, which he says it greatly resembles in appearance. Stems about a span long, simple, herbaceous, decumbent, leafy on all sides. Leaves alternate, sessile, lanceolate, undivided, entire; white and downy beneath. Stalk single-flowered, terminal, longer than the leaves. Radius yellow. Willdenow describes this species as having the leaves of *Gorteria rigens*, only undivided, and sometimes, but rarely, trifid. Radius narrow, lanceolate. We have seen no specimen.

3. *M. speciosa*. Willd. (*Gorteria rigens* β; Thunb. Act. Soc. Nat. Scrut. Haf. v. 4. 4. t. 4. f. 1.)—Leaves either pinnatifid or undivided, downy beneath; segments linear-

lanceolate. Stalk single-flowered. Calyx downy.—Root subdivided, fibrous. Leaves entirely radical; green above and slightly downy; white with down beneath; revolute at the margin. Stalks downy, single-flowered, twice as long as the leaves. Florets of the radius yellow, with a slight streak on their lower side, and a dark spot at their base on the upper. Willdenow observes, that this differs from *Gorteria rigens*, in the structure of its calyx, in having no stem, as well as on account of its annual root, and whole habit.

4. *M. incisa*. Willd. (*Gorteria incisa*; Thunb. Prodr. 162. Act. Soc. Nat. Scrut. Haf. v. 4. 6.)—Leaves either pinnatifid or undivided, hairy, downy beneath. Stalk single-flowered, the length of the leaves. Calyx smooth.—Root annual, descending very deep. Leaves mostly radical, on stalks, oblong, entire; when pinnatifid, their segments are ovate-oblong, green and rough above, downy and white beneath, with reflexed margins; they are all erect, about three inches long, their stalks and ribs sprinkled over with white hairs. Stalk round, slightly striated.

5. *M. Othonna*. Willd. (*Gorteria othonnites*; Thunb. Prodr. 163. Act. Soc. Nat. Scrut. Haf. v. 4. 7. t. 4. f. 2.)—Leaves pinnatifid, smooth. Stalk single-flowered. Calyx turbinate.—Of this we find an unnamed specimen in the Linnean herbarium. It has no stem. The leaves are all radical, two or three inches long, smooth, and somewhat glaucous, deeply pinnatifid; their segments linear, with a cartilaginous, prickly-toothed margin, and a terminal bristle. Flower-stalk four inches high, erect, simple, with one linear bractea above the middle. Flower terminal, solitary, erect, an inch in diameter. Calyx striated, smooth, with two rows of marginal teeth; the innermost furnished with long points but much shorter than the radius, the florets of which appear to be yellow, with a brown stripe underneath.

6. *M. pinnata*. Willd. (*Gorteria pinnata*; Thunb. Prodr. 162. Act. Soc. Nat. Scrut. Haf. v. 4. 6. t. 5.)—Leaves pinnate, villous, downy-white beneath; leaflets elliptical, the terminal one larger and subdivided. Stalk single-flowered. Calyx villous.—Having no specimen of this, and being obliged to rely on Willdenow for his reference of the present, as well as of all the other species, to the Copenhagen Transactions, we are unable to describe it further than the specific character.

MUSSITANDI, in the Greek church. While the priest stands with his face towards the east, and repeats the prayers in a subdued voice, the choir is almost constantly singing hymns, without the congregation being supposed to pray themselves, or hear his prayers. (Rites and Ceremon. of the Gr. Church, by Dr. King, p. 46.) Perhaps the musical performance in the churches of Italy, during the *mussitandi*, or *messabasso*, had the same origin.

MUSSO, CORNELIUS, in *Biography*, a famous Italian prelate, and one of the most celebrated preachers of the 16th century, was born at Placentia in the year 1511. When but nine years old, he was permitted to dedicate himself to the order of St. Francis, and entered a monastery in his native city. He speedily discovered an excellent genius, a prodigious strength of memory, and talents apparently well adapted to the pulpit. He was accordingly educated in such a way as to render him qualified as a preacher. He was in due time sent to Venice with letters of recommendation, and though his exterior was much against him, yet he had scarcely entered upon the services of the church when he effaced all unfavourable impressions, and captivated his audience by the charms of his voice, the sublimity of his conceptions, and the graces of his delivery. He now found many zealous patrons, and was particularly honoured with the



the friendship of the famous Peter Bembo, afterwards cardinal, who assisted him in his rhetorical studies. He, at this period, applied himself diligently to the oriental languages, after which he resumed his pulpit labours, and rose to a most decided pre-eminence among his contemporaries. He obtained the esteem of the duke of Milan, Francis Sforza, by whom he was appointed professor of metaphysics at the university of Pavia, and he even condescended to attend his lectures. Upon the death of the duke, Musso was chosen professor of metaphysics at Bologna. Here he likewise read lectures on the epistles of St. Paul. In 1541 he was, through the interest of cardinal Campegio, appointed by pope Paul III. bishop of Bertinoto, in the Romagna; after this, purely on account of his merit as a preacher, he was translated to the see of Bitonto, in Apulia; and in 1545, the pope sent him to the council of Trent, where he distinguished himself by a Latin sermon at the opening of the council. After the death of pope Paul III. he was selected by the two succeeding pontiffs as domestic prelate and assistant. In 1560, he was sent nuncio into Germany with the pope's nephew, and executed his commission at the court of Ferdinand with great reputation. He was, after this, employed at the court of Rome, on various subjects, till the dissolution of the council of Trent, when he retired to his bishopric, and applied himself to the reformation of abuses, and the diligent discharge of the duties of his holy calling. Having resided ten years on his see, he went again to the metropolis, and was detained by pope Gregory XIII. as his assistant, till his death, in 1574, when he was in the sixty-third year of his age. He was author of several theological works, which were printed after his death, among which are "Commentaries upon St. Paul's Epistle to the Romans," in Latin; an Italian "Commentary upon the Magnificat;" "De Historia Divina;" but the works for which he is most celebrated are his "Sermons," published at Venice, in four volumes 4to. in 1582 and 1590. He is mentioned by Dupin as a "polished and eloquent writer;" and Tiraboschi says, in speaking of his sermons, if they do not prove that the bishop of Bitonto was the first reformer of pulpit eloquence, they at least testify that he contributed greatly toward such a reformation. They abound in solid matter, beautiful images, and eloquent expressions. Gen. Biog.

Musso, in *Geography*, a town of Italy, in the department of the Lario; 25 miles N. of Como.

MUSSULMAN, or MUSULMAN, written in Arabic *moslem*, *mosliman*, or *mosliman*, a title by which the Mahometans distinguish themselves; signifying, in the Turkish language, *true believer*, or *orthodox*.

The appellation was first given to the Saracens; as is observed by Leunclavius. There are two kinds of mussulmans, very averse from each other; the one called *Sonnites*, and the other *Shiites*. The Sonnites follow the interpretation of the Koran given by Omar; the Shiites are the followers of Ali. The subjects of the king of Persia are Shiites; and those of the grand signior, Sonnites. See SONNA, and ALCORAN.

Some authors will have it, that the word mussulman signifies *saved*, that is predestinated; and that the Mahometans give themselves the appellation, as believing they are all predestinated to salvation. Martinus is more particular as to the origin of the name; which he derives from the Arabic *مُصْلَمٌ*, *musalam*, *saved*, *snatched out of danger*: the Mahometans, he observes, establishing their religion by fire and sword, massacred all those who would not embrace it, and granted life to all that did, calling them mussulmans; *q. d. erepti e periculo*; whence the word, in course of time, be-

came the distinguishing title of all those of that sect, who have affixed to it the signification of *true believer*.

MUSSY, in *Geography*, a town of France, in the department of the Aube, and chief place of a canton, in the district of Bar-sur-Seine; 9 miles S.S.E. from it. The place contains 1691, and the canton 7068 inhabitants, on a territory of 117½ kilometres, in 8 communes.

MUSSYR, one of the Kurile islands, which is round and stony, and lies at the distance of 35 versts from Syafkutan; its diameter is not more than three versts. It is destitute of water, but is nevertheless frequented by great numbers of birds. Sea-lions abound here.

MUST, MUSTUM, sweet wine newly pressed from the grape; or the new liquor pressed from the fruit before it has worked or fermented.

*Must of Rhenish Wine*. This is a liquor that, though drank by some, is found extremely to affect the brain; for not having passed the natural effervescence which it would have been subject to, in the making of wine, its salts are locked up, till the heat of the stomach setting them to work, they raise their effervescence there, and send up abundance of subtle vapours to the brain. The Rhenish must is of two kinds, being made either with or without boiling. That made without boiling is only put up so close in the vessel, that it cannot work; this is called *stumm-wine*. That by boiling is thus prepared: they take strong vessels not quite filled, and putting them into a cellar, they make a fire mild at first, but increased by degrees, and afterwards they gradually lessen it again, that the boiling may cease of itself. This operation is finished in thirty-six or forty hours, according to the size of the vessel; and the wine-boilers, instead of common candles, which would melt by the heat, use thin pieces of split beech wood. These also serve for a double purpose, not only lighting them, but giving them notice of the boiling being enough; before that time, the quantity of vapours thrown up with them burn dim; but as soon as it is finished, the vapours ascend in less quantity, and the lights burn brisk and clear. About seven or eight days after this boiling, the must begins to work, and after this working it is called wine. They have also another kind of Rhenish must, which is thus prepared: they boil the liquor to half the quantity, and put into it the medicinal ingredients they are most fond of; such as orange-peel, elecampane-root, and juniper-berries, or the like; being thus medicated, the whole works much more slowly than it otherwise would. If the boiled must, by too violent an effervescence, cast out its lees, it will on this become vapid and dead, unless this separation is stopped by some fatty substance, such as fresh butter, or the like: they put this in upon a vine-leaf, or else apply lard to the mouth of the vessel.

*A Must for artificial Wine* may be thus made: take twenty pounds of fine sugar, five gallons of water, four ounces of white tartar, finely pulverized, or cream of tartar, and boil them in a large vessel over a gentle fire.

MUSTACEUM, among the ancient Romans, a kind of cheese-cake. It was composed of cheese, aniseed, cummin, and suet added to flour, moistened with *mustum*, or new wine.

MUSTACHIO, or MISTACHIO, a Venetian measure for fluids: 38 mustachi make a muid, and 76 an amphora.

MUSTAFA PACHA KUPRI, in *Geography*, a town of European Turkey, in Romania, on the Marin, over which is a celebrated stone-bridge, built by Mustapha Pacha; 18 miles N.W. of Adrianople.

MUSTAFA Pacha Palanka, a town of European Turkey, in Bulgaria; 56 miles W.N.W. of Sofia.



MUSTAN, a town of Hindoostan, in Bengal; 32 miles N.N.E. of Nattore.

MUSTAPHA I., in *Biography*, emperor of the Turks, ascended the throne, in 1618, at the age of twenty-five, on the death of his brother Achmet, but his neglect of public business and gross sensuality, caused him, in four months, to be deposed, and committed to the state prison of the Seven Towers. His successor and nephew, Ofman, was as little adapted to the duties of government as his predecessor, and was, in 1622, deposed and put to death. Mustapha was now taken from the dungeon, and replaced on the imperial throne, but he had scarcely been in that situation fifteen months, when he was again deposed, and brought to an ignominious end, being carried on an ass through the streets of Constantinople, conducted to his former prison, and strangled.

MUSTAPHA II., son of Mahomet IV., succeeded Achmet II., his uncle, in 1695. He was in the prime of life when he ascended the throne, and was impatient to distinguish himself as a warrior: his principal action was with the imperialists, whom he defeated at Temeswar. He made war with success against the Venetians, Poles, and the Russians; but at length fortune turned against him, and he was obliged to make peace, under the mediation of England and Holland. This treaty, which is called that of Carlowitz, was signed in January 1699. Mustapha returned to Constantinople, humiliated in the eyes of his subjects, committed the management of public affairs to his vizier, and retired into the country, where he spent his time in hunting and other amusements. Discontents at length broke out among the soldiery, which produced a complete revolution in the government of Constantinople. The emperor was soon after deposed by his subjects, and died, in 1703, of melancholy. He was well disposed, and possessed talents superior to most of his successors.

MUSTAPHA III., the son of Achmet III., succeeded to the throne in 1757, having lived in a state of confinement ever since the deposition of his father in the year 1730. He had contracted all the luxurious habits of an inmate of a seraglio; but his great passion was his love of money. He was, nevertheless, humane and just, and displayed great moderation towards his Christian subjects. But with all his good qualities his reign was unfortunate, because the public affairs were left to the management of his ministers, and the controul of a sister, who possessed an unbounded influence over him, but who was ill calculated for the business of a state. The disturbances in Poland occasioned a war with Russia in 1768, which was attended with numerous disasters, such as the loss of Bender and Crim Tartary, the revolt of the Greeks in the Morea, and the destruction of a Turkish fleet in Lesser Asia. He died in January 1774.

MUSTAPHA BAD, in *Geography*, a town of Hindoostan, in the circar of Sirhind; seven miles N. of Tannafar. — Also, a town of Hindoostan, in Oude; 10 miles N.N.W. of Munichpour. N. lat. 25° 58'. E. long. 81° 36'.

MUSTAPHINA, a town of Russia, in the government of Upha; 11 miles S. of Sterlitamatk.

MUSTARAH, a town of Hindoostan, in the circar of Gooty; 33 miles S.W. of Gooty.

MUSTARD, in *Botany*, *Gardening*, and the *Materia dietetica* and *Medica*. See *SINAPIS*.

MUSTARD, in *Agriculture*, a plant of the annual kind, sometimes cultivated in the field as a crop. It is a sort of plant that may, in some cases, where the soil is suitable, be grown to much advantage.

It has been stated by Mr. Young in his Calendar, that in breaking up the rich common of Marshland Smeeth, in Nor-

folk, the crop that was supposed to pay better than any other, was mustard. The soil is a rich silt and clay, worth 60s. an acre. It was ploughed once, and harrowed twice, and sown one-fourth of a peck of the seed *per* acre, from Candlemas to the end of March, according to the weather. Few farmers have a soil that answers for this crop, but where markets are promising, they should have it in their mind. It may also be added, that it is hand-hoeed twice. The crop is reaped in the beginning of September, being tied in sheaves, and left three or four days on the stubble. It is then stacked in the field. It is remarked that rain damages it. A good crop is six or seven combs an acre; the price from 7s. to 20s. a bushel. Three or four crops, it is observed, are taken running.

And in Kent, according to the survey of Mr. Boys, white mustard is cultivated for the use of the feedsmen in London. In the tillage for it, the ploughed land is harrowed over, and then furrows are stricken about eleven or twelve inches apart, sowing the seed in the proportion of two or three gallons *per* acre in March. The crop is afterwards hoed and kept free from weeds. It is usually ripe about July, when it is reaped and threshed out upon a sail cloth in the field.

In order to save the seeds of this plant, sow a spot of ground with it in the spring; thin the plants when they have about four leaves, and at the same time hoe down the weeds, as is practised for turnips. This hoeing is to be repeated in about a month after, and the plants are then to be left about eight or nine inches asunder, which will be sufficient space for the growth of this species. If these hoeings are well performed, in dry weather, they will keep the ground clean till the mustard seeds are ripe. The stalks of this plant, which are branched and hairy, will then be about two feet high, and the ripening of its seed is indicated by the pods changing to a brown colour; immediately after which they should be cut down, dried upon cloths for two or three days, and then threshed out for use. And the larger kinds of mustard are to be treated in the same manner; excepting that, as they grow much larger, a proportionably greater space must be left between the plants; and as their seeds will not ripen so soon as those of the smaller kind, three hoeings, or rather good deep stirrings of the ground, may be requisite.

The common mustard grows naturally in many parts of this kingdom; but is cultivated in the fields for its seeds, of which the condiment called mustard is made.

In the Annals of Agriculture, Mr. Young suggests, that mustard seed sometimes turns out prodigiously profitable, that is, three or four, and even five quarters, at 4l. a quarter. But it is hazardous, and has a very great evil, of rising afterwards in successive crops, and is hardly ever completely eradicated afterwards from the land.

MUSTARD, *Bastard*. See *CLEOME*.

MUSTARD Buckler, or *Bastard Mithridate*. See *BISCU-TELLA*.

MUSTARD, *Hedge*. See *ERYSIMUM* and *SISYMBRIUM*.

MUSTARD, *Hedge*, in the *Materia Medica*. The *Erysimum officinale*, referred by some botanical writers to *sisymbrium*, is common on dry banks and waste places, and flowers from June till September. The taste of this herb, and particularly of the tops of the flower spikes, is somewhat acrid. Its seeds are considerably pungent, and appear to possess the same quality with those of mustard, in a weaker degree. It is said to be attenuant, expectorant, and diuretic, and has been strongly recommended in chronical coughs and hoarseness. Rondeletius informs us, that the latter complaint, occasioned by loud speaking, was cured by this plant in three days. Other testimonies of its good effects in this disorder are recorded by writers on the *Materia Medica*, and among others



others by Dr. Cullen, who, for this purpose, recommends the juice of the erysimum to be mixed with an equal quantity of honey or sugar. In this way it is also said to be an useful remedy in ulcerations of the mouth and throat. In most cases of disease, perhaps the seeds of erysimum, as being more pungent, should be preferred to its leaves. The *Erysimum alliaria*, sauce-alone, or stinking hedge-mustard, is common on hedge-banks, and flowers in May and June. The leaves of this plant have a moderate acrimony, and a strong flavour resembling that of garlic or onions; they give the same kind of taint to the breath as those roots, and have been used for the same culinary purposes; whence the name *alliaria*. On drying, however, their sensible qualities are considerably diminished, or entirely lost. "The juice, expressed from the fresh leaves," says Lewis, "is strongly impregnated with their active matter, but loses the greatest part of it on being inspissated to an extract with the gentlest warmth; in its liquid state, duly secured from the air, it may be kept uninjured for many months. On distilling the fresh herb with water, there arises a small portion of essential oil, which tastes and smells very strongly. The medicinal character of *alliaria* is that of a powerful diaphoretic, diuretic, and antiscorbutic; and as partaking of the qualities of garlic, it has been deemed useful as an expectorant and deobstruent, in humoral asthma, and other cases of dyspnoea. It has also been much esteemed as an external application, to promote suppuration; and Boerhaave informs us, that he cured a gangrene of the leg, arising from a neglected fracture and contusion, by applying the bruised leaves of *alliaria* with wine. Woodville Med. Bot.

This species of crysimum was formerly eaten as a salad herb by the poorer sort of people, who gave it the name of Sauce-alone. The only official preparation of this plant is the "Syrupus de erysimo." It is recommended by Dr. Stahl for scirrho-cancerous tumours, taken internally, and also applied externally to the tumours. We have an account of its good effects by M. Bingert, in *Act. Med. Berol.* Dec. 3. vol. i. p. 59.

MUSTARD, *Mithridate*. See THLASPI.

MUSTARD, *Rough-podded*. See SISYMBRIUM.

MUSTARD, *Tower*. See TURRITIS.

MUSTARD, *Baslard-Tower*. See ARABIS.

MUSTARD, *Treacle*. See THLASPI and CLYPEOLA.

MUSTELA, in *Natural History*, a genus of the class Mammalia, and order Feræ. The generic character is, that it has six upper fore-teeth, erect, acuter, distinct; and six lower, which are more obtuse, and crowded; two are placed within; the tongue is smooth.

In a variety of circumstances otters and weefels resemble each other; their bodies are long, and of the same thickness; their feet are short, hair shining and claws immoveable; they burrow in the ground, prowl and prey by night; but the otters live mostly in water, swim on the surface and under it, and feed chiefly on fish. They do not climb, nor leap with the body curved, and tail stretched, like the weefels; the head is larger and thicker; the tongue is strewed with soft prickles; otters have five grinders in each jaw, on each side; weefels have four, five or six.

Naturalists are very much divided in their methods of classing animals of the kind now under consideration. Mr. Pennant, who is followed by Dr. Shaw, unites the genus *Mustela* with the *Viverra*; but Mr. Pennant includes in his genus the race of otters; Dr. Shaw preserves the otters or *lutræ* distinct from both. We shall in this case, as in others, follow the Linnæan division, and, according to Gmelin, there are 28 species, which are divided into those that have

VOL. XXIV.

hind-feet palmate, as otters; and those whose feet are cleft, as in the case of weefels.

#### A. Hind-feet palmate. Otters.

##### Species.

LUTRIS; Sea-Otter. In this species there are two varieties; 1. Hind-feet hairy; tail one-fourth part as long as the body. 2. Black, with a yellow spot; the first inhabits the coasts of Asia and America; the second is found in the rivers of South America. This is one of the largest of the otters, measuring about three feet from the nose to the tail, and the tail is thirteen inches long. The colour of this species is a deep, glossy, brownish-black; the fur being extremely soft and very fine; the hind-feet resemble those of the seal, the toes being connected by a strong granulated membrane, with a skin skirting the outward toe, as in some of the water-fowl; the tail is short, broad, depressed, and pointed at the end. The sea-otter has been found to weigh 70 or 80 pounds. It is met with in great abundance in Behring's islands, Kamtschatka, the Aleutian and Fox islands, between Asia and America. They will sometimes come on shore in the Kurile islands, but are never seen in the channel between the north-east of Siberia and America. They breed once a year, and are supposed to bring but one at a time; they are extremely harmless animals, and singularly affectionate to their young. This animal is killed for its skin; which is one of the most valuable of furs, being sometimes sold for 25*l.* to the Chinese. Sea-otters are sometimes taken with nets, but more frequently destroyed with clubs and spears. They feed chiefly on lobsters and other shell-fish.

PARAGUENSIS. This species is mixed with grey and black; the feet are palmate. It inhabits on the Río de la Plata; is the size of a cat; the fur is velvety, and the flesh very delicate.

CHILENSIS. The tail of this species is long, round; the feet very hairy. It is found on the coasts of Chili.

\* LUTRA; Common Otter. The hind-feet of this species are naked; the tail is half the length of the body. This is the Greater Otter of Pennant, and is found in almost every part of Europe; as well as in the colder regions of Asia; inhabiting the banks of rivers, and feeding principally on fish. It is also to be met with in the northern parts of America, where it grows to a much larger size than the European species; but in the river Euphrates, it is found no larger than a common cat: this, perhaps, is a different species, though sometimes denominated the *Lutra*. The usual length of the common otter is nearly two feet; with a tail of sixteen inches. The colour of the whole animal is brown, with some patches of different colours; the head is broad and flat; the mouth small; the teeth strong; the lips very muscular; the ears short and rounded; the eyes are small, and the neck very thick; the legs are short and thick, loosely joined to the body, and so placed as to be capable of being brought on a line with the body, and of performing the office of fins; the toes, which are five in number on all the feet, are connected by broad strong webs, and the whole foot is naked, or without hair. The otter shews great sagacity in forming its habitation; it burrows under ground, in the banks of some river or lake; and always makes the entrance of its hole under water; working upwards to the surface of the earth; and, before it reaches the top, makes several lodges, that in case of floods it may have a retreat; to all these he forms an orifice for the admission of the air. The natural food of the common otter is fish, but when the weather is hard, and it is hardly driven for food, it will attack the

3 L.

smaller



smaller quadrupeds, as well as poultry. The female produces four or five young at a birth; it is said that otters, when taken very young, may be trained up to hunt and fish for their masters. The male calls the female by a soft murmuring cry.

**CANADENSIS**. This is black; the fur is smooth; the tail long and tapering. It inhabits North America, particularly Canada, and is about two feet long; the tail ten inches.

**LUTREOLA**; Lesser Otter. The specific character of this is, that it has very hairy feet, equal toes, and a white mouth. This species very much resembles the *M. lutra*, but is considerably smaller; the body is of a dusky colour, but with a tawny cast; the chin and throat are white; the ears are roundish; the feet broad, webbed, and covered with hair, instead of being naked, as in the former animal. In North America this species is known by the name of minx, and is said sometimes to leave the water, and prey on poultry, &c. in the manner of a pole-cat; but in Poland and other parts of Europe, where it is found, it lives chiefly on fish, frogs, &c. Its fur is very valuable, and next in beauty to that of the sable.

**CAYENNENSIS**; Cayenne Otter. Toes on the fore-feet, unconnected; tail long, taper, naked. This species inhabits Cayenne, and is seven inches long.

**MINX**. The body of this species is of an entirely deep chestnut. It inhabits North America, on the banks of rivers; feeds on fish, birds, and mice, and sometimes haunts farm-yards.

#### B. Feet cleft. Weefels.

##### Species.

**BARBATA**; Guinea Weefel. Black; a white three-lobed spot under the neck. This species is found in Guinea and Brazil; and is the size of a martin. The hair is coarse, the ears rounded and hairy; the space between the eyes is cinereous; it has four teats.

**GALERA**; Brown Weefel. The body is uniformly brown. It inhabits Guinea and Madagascar; burrows like a rabbit, and is destructive to game and poultry. The body of this species is shaped like a rat.

**AFRA**; Madagascar Weefel. The body above is brown, beneath it is of a pale yellow; the tail is blackish at the tip. It inhabits, as its trivial name imports, the island of Madagascar; and also the interior parts of Africa.

**VISON**. The body of this is bright tawny; tail dusky. It inhabits North America; and resembles the martin, which will soon be described.

**CANADENSIS**; Pekan. Body blackish-tawny; but on the breast there is a white spot. It inhabits Canada, and is about two feet long, the tail is ten inches in length.

\* **FOINA**; Martin. Body blackish-tawny; throat and breast white. This is an animal of very elegant appearance. Its length from nose to tail is about eighteen inches, and the tail is ten inches. It is a native of most parts of Europe, inhabiting woods and fields, and preying on birds and other small animals. If taken young it may be easily tamed, and even rendered domestic. It breeds in the hollow of trees, and brings forth from three to five young at a time. The skin is used as a fur.

**MARTES**; Pine-Martin. Body blackish-tawny; throat and breast yellow. This species is found in the northern parts of Europe, Asia, and America, and is very rarely found in the south; it preys by night; lives by day in hollow trees, and squirrels' nests; it feeds on young squirrels, mice, berries,

ripe fruits and honey; in the winter it will watch for and devour pigeons and poultry; it brings forth seven or eight young at a time.

**GUIANENSIS**; Guinea Martin. Dark-brown; the forehead is white; the neck has a long narrow stripe along the side. It inhabits Guinea, is about two feet long, with a tail of five inches. The fur is sprinkled with black and white.

**LANIGER**; Woolly Martin. The body of this species is covered with woolly hair; the tail is long and tapering. It inhabits Cayenne, and is sixteen inches long, with a tail of five inches.

**ZIBELLINA**; Sable. There are three varieties of this species; 1. Body dark-tawny; forehead white; throat cinereous; the 2d is snowy white; the 3d has a collar of white or yellow spots round the neck. This species inhabits the northern parts of Asia and America, Siberia, Kamtschatka, and the Kurile islands. It sleeps by day; preys by night on smaller weefels, squirrels, and hares; in winter on birds, particularly on partridges; in autumn on berries: its fur is very precious. Formerly, in the Russian empire, the hunting of these animals was the task imposed on those exiles who were banished into Siberia. As that country became more populous, the fables have, in a good measure, quitted it, and retired into the desert forests and mountains. They usually reside on the banks of rivers, or on the small islands near them. At present the sable hunters form themselves into parties or troops, from five to forty each; the last subdivide into lesser parties, and each chooses a leader, but there is one commander-in-chief that directs the whole. A small covered boat is prepared for each party, laden with provision, a dog and a net for every two men, and a vessel to bake their bread in. Each party has also an interpreter for the country they intend to penetrate. Every party then sets out, according to the course their leader points to them. They ascend the rivers, drawing up their boats, till they arrive in the hunting country. There they stop, build huts, and wait till the waters are frozen, and the season commences. Before they begin the chase, their leader assembles them; they join in a prayer to the Almighty for success, and then separate. The first fable each party takes is called God's fable, and is dedicated to the church.

They then penetrate into the woods, and mark the trees as they advance, that they may know their way back. In their hunting-quarters they form huts of trees, and bank up the snow around them. Near these they lay their traps; then advance farther, and lay more traps; still building new huts in every quarter, and returning successively to every old one, to visit the traps, and to take out the game, and to skin it, which none but the chief of the party must do. During this time they are supplied with provisions by persons who are employed to bring it on sledges from the places on their route, where they are obliged to form magazines. The traps are a sort of pit-falls, with a loose board placed over each, baited with fish or flesh. When fables grow scarce, the hunters trace them on the new fallen snow to their holes, place their nets at the entrance, and sometimes wait, watching two or three days for the coming out of the animal. It has happened that these poor people have, by the failure of their provisions, been so pinched with hunger, that, to prevent the cravings of appetite, they have been reduced to take two thin boards, one of which they apply to the pit of the stomach, the other to the back, drawing them tight together by cords placed at the ends. Such, says Mr. Pennant, are the hardships our fellow creatures undergo, to supply the wantonness of luxury!

The season of chase being finished, the hunters re-assemble, report



report to their leader the number of fables each has taken, make complaints of offenders against their regulations, punish delinquents, and share the booty. They then continue at the head-quarters till the rivers are clear of ice; when they return home, and give to every church the dedicated furs. The price of these furs varies from one to about ten pounds sterling. Fine and middling skins are sold without the bellies; the coarse ones with them. The finest fables are sold in pairs perfectly similar; and such pairs are dearer than single ones of the same goodness; for the Russians want those in pairs for facing caps, cloaks, and tippets. The blackest are reputed the best. Sables are in season from November to February; those caught at any other time of the year are short-haired. The hair of fables differs in length and quality. The more a skin has of such long hairs, and the blacker they are, the more valuable is the fur. The very best have no other but those long black hairs. Below the long hairs there are, in the greater part of fable furs, some shorter. Beside various other particulars respecting the fur, the furriers attend much to the size, always preferring, *cæteris paribus*, the biggest, and those that have the greatest gloss. The gloss vanishes in old furs; the fresh ones have, what dealers in furs call, a bloomy appearance; the old ones are said to have done blooming. The dyed fables always lose their gloss, and become less uniform, whether the lower hairs have taken the dye or not, and the hairs are commonly twisted or crisped, and not so straight as the natural ones. Some fumigate the skins to make them look blacker; but the smell, and the crisped condition of the long hair, betray the cheat; but dyeing and fumigating are both detected by rubbing the fur with a moist linen cloth, which grows black in such cases. The Chinese have a way of dyeing the fables, so that the colour not only lasts, which is more than the Russian cheats can effect; but the fur keeps its gloss, so that the fraud can only be detected by the crisped hairs.

The country about the river Ud affords sometimes fables, of which one is often sold for twelve or fourteen pounds sterling. The bellies of fables, which are sold in pairs, are about two fingers' breadth, and are, like the skins, tied together in parcels of forty each. One of these parcels sells from one to two pounds sterling; tails are sold by the hundred; the very best furs must have their tails, but ordinary ones are often cropped. A hundred sell for from four to eight pounds. White fables are rare; they are not common merchandize, but bought only as curiosities. Some are yellowish, and are bleached in the spring on the snow. The common fables are scarcely any thing better in hair and colour than the martin.

The fable is also found in North America. The Russians have often discovered the skins mixed with those of martins in the fur dresses, which they get from the Americans by way of exchange. Their fur is more glossy than that of the Siberian fable, and of a bright chestnut colour, but of a coarser quality. The length of the American fable is about twenty inches; the trunk of the tail is only five; but from the rump to the end of the hairs eight. His ears are more pointed than those of the Asiatic fable; its feet are large and hairy, both above and below; it has five toes, with white claws on each foot. The colour of its head and ears is whitish; its whiskers are short and black; its whole body of a light tawny; its feet are brown.

**AMERICANUS**; American Sable. Body light and tawny, head and ears whitish. It inhabits North America, and is about 20 inches long.

**NIGRA**; Fisher Weefel. Back, belly, legs, and bushy tail black; the sides are brown. This is a native of North America, where it is supposed to be pretty common, as not

less than five or six hundred skins have been brought, in one season, from New York and Pennsylvania. Though the general colours are those that have been described above, yet they vary, and in some instances the animal is nearly black.

\* **PUTORIUS**; Pole-cat. Body blackish-yellow; mouth and ears white. This is one of the most remarkable of the weefel tribe; its colour is an extremely deep blackish-brown, with a tawny cast slightly intermixed. It is about seventeen inches long, exclusive of the tail, which measures six inches. It is found in most countries of Europe, and also in many parts of Asia, and in Siberia; it forms itself a subterraneous retreat, sometimes beneath the roots of large trees, sometimes under hay-ricks and in barns. It preys indiscriminately on the smaller animals, and is very destructive to poultry. During the summer it frequents rabbit warrens, or the hollow trunks of trees, and other places of the same kind. It is a strong and active creature, and will spring with great vigour and celerity when preparing to attack its prey, or to escape from its pursuit. It emits a smell, or verbally fetid, being furnished, like several others of the weefel tribe, with certain receptacles which secrete a thickish fluid of a peculiarly strong and offensive odour. The fur is beautiful, and when properly dressed, is numbered among the commercial furs used as articles of dress.

\* **FURO**; Ferret. Eyes red and fiery: this animal, in its general form, resembles the pole-cat, but is a good deal smaller. It is a native of Africa, and supports with difficulty an European winter; it is, however, tamed in Europe for the purpose of catching rats and rabbits. It also breeds in this and other European countries, and hence is regarded as natural to us. It sleeps almost continually, and when awake, immediately begins to search for food; it is usually fed with bread and milk, but its favourite food is the blood of the smaller animals. The ferret was brought into Spain from Africa; probably for the purpose of freeing that country from the vast number of rabbits with which it was overrun, and from Spain it was gradually introduced into other European states. It is very irascible, and when irritated, his odour, which is at all times offensive, becomes far more so than usual. The general colour of the ferret is very pale yellowish-brown, or cream colour.

**SARMATIANA**; Sarmatian Weefel. The upper part of the body is yellow and brown. It resembles the pole-cat, but is larger; the hair, excepting on the feet and tail, is shorter.

**SIBIRICA**; Siberian Weefel. The body is tawny; and the feet very hairy. It inhabits the woods of Siberia; is voracious, devours flesh, and steals butter from the huts of the peasants; the tail is hairy, and darker than the body; the fur is long and loose; the face is black; the nostrils whitish; about the eyes it is spotted, and the throat is sometimes spotted with white.

\* **ERMINEA**. Tail black at the tip; there are two varieties: in the first the body has a reddish tinge; this is the English stoat: in the second, the body is white, and the tail is blackish at the tip; this is the ermine. It inhabits Europe, and the colder parts of America, Asia, and China; it lives in heaps of stones, banks of rivers, hollow trees, and forests, especially of beech; preys on squirrels, mice, and small animals. In Norway and in Siberia, the skins are a great article of commerce; most of the ermine or white stoat-skins being brought from thence. In Siberia, the stoat is said to be found in birch forests, and the skins are sold on the spot, at from two to three pounds *per* hundred. The animals are either taken in traps, or shot with blunt arrows.

\* **VULGARIS**; Common Weefel. Body tawny-brown, beneath



neath white; the tail is the same colour as that of the body; there is a variety in which the body is white; tip of the tail with a few black hairs. This species inhabits the temperate and cold regions of Europe, Asia, and America; in Russia it becomes white in winter; it is about half the size of the ermine; it eats fish, flesh, mice, eggs, and fungi; but no other vegetables; it preys by night, gets into the holes of mice, and devours them, leaving the teeth only; in its habits it is fetid, dirty, and drinks often; it is very cunning, continually looks about, and is not easily destroyed by a cat. From the extreme flexibility of its body, and its wonderful activity, it readily ascends the sides of walls, and by this means pursues its prey into the most distant retirements, and it is a frequent inhabitant of barns and granaries. It brings forth four or five young at a time, preparing for them a bed of moss, grass, &c.

**MELINA**; Yellow Weefel. Back and belly pale cinereous-yellow; face, crown, legs, and tail black.

**QUIQU**. Body brown; snout wedge-form. This species inhabits Chili, living under ground, and feeding on mice; it is principally distinguished by its wedge-shaped snout; the ears are short and round, with a white spot in the middle; the legs and tail are short; the feet like those of a lizard; the length of the animal is from nose to tail about thirteen inches.

**MUSTELA**, in *Ichthyology*. See **GADUS Mustela**.

**MUSTELA Africana**, in *Zoology*. See **SCIURUS Palmarum**.

**MUSTELA Daurica**, &c. See **LEPUS Alpinus**.

**MUSTELA Fluvialis**, in *Ichthyology*. See **GADUS Lota**, and **EEL-Pout**. See also **PETROMYZON**.

**MUSTELA Fossilis**. See **COBITIS Fossilis**.

**MUSTELA Lumpenus**, a name given by Artedi, from Ray and others, to that species of blennius, called simply *lumpen* at Antwerp, and by Gesner *galea*.

It is distinguished, by Artedi, from the other blenni, by a specific name, expressing that it has four bifid cirri or beards, growing under the throat, and transverse areolæ or streaks on the back. It is found in the clayey and sandy bottom of the European seas, and conceals itself among the fuci on the shore, where it deposits its spawn in July. It is smooth, with small rounded scales, of a palish colour, the head yellowish, the body narrow, and the spinous radii of the dorsal fin are marked backwards. See **BLENNII**.

**MUSTELA Marina**. See **PETROMYZON Marinus**.

**MUSTELA Vivipara**, the *Blennius viviparus*. See **EEL-Pout**.

**MUSTELINUM GENUS**, in *Zoology*, the name of a class of animals, so called from their general likeness to the weefel in shape: they are all carnivorous animals, and are distinguished from the other quadrupeds of that sort by their smallness, the length of their bodies, and the smallness and narrowness of their heads. Their feet are small, and their legs short, whence they are formed for running into holes or crannies; their teeth are less numerous than in many quadrupeds; in the dog kind there are forty, and in these but thirty-two. Their intestines are short and simple; they have no colon nor cæcum, nor any distinction of great and small guts. Ray.

**MUSTELUS SPINAX**, in *Ichthyology*, a name given by Bellonius, and some other writers, to the fish called *galeus acanthias*, a species of *squalus*. See **SQUALUS Acanthias**, and **SPINAX**.

**MUSTELUS Lævis**, a name by which Aldrovandus, and some others, have called the fish distinguished by others by the name of *galeus lævis*, the smooth hound-fish. See **SQUALUS Mustelus**.

**MUSTELUS Lævis**, a name of a kind of shark, called also the *canis galeus*, and *canofa*. See **SQUALUS Galeus**.

**MUSTER**, in *Geography*, a town of the duchy of Courland; 56 miles S.E. of Seelburg.

**MUSTER**, in *Military Language*, denotes a review of a body of military forces under arms, in order to take account of the numbers, condition, accoutrements, arms, &c.

The word is formed of the French, *mouftré*, *specimen*, a show or exhibition. See **REVIEW**.

It is needless to enquire into the antiquity of musters, since they must have existed ever since an army has been assembled. Without a muster it would not be known whether the feudal tenants, or others liable to furnish soldiers, had provided their due number, nor could a general otherwise know the true strength of his army, the ground they would occupy, the quantity of provision and forage necessary for their subsistence, and that of their horses; nor the money required for paying them. The object of a muster was not only to ascertain the number of men and horses, but likewise to examine their armour and weapons. Great abuses having crept into the practice of mustering the troops half-yearly, so that the real effective strength of the army could never be exactly ascertained, a new regulation has taken place, in virtue of which the several regiments and corps are mustered every month by the regimental paymaster, and detachments of regiments in the respective districts in which they are stationed, by an officer called paymaster of the district. These have superseded the commissaries of musters; and the pay-lists and muster-rolls of the army are thus made to tally with each other. By 49 Geo. III. c. 12. every regiment, troop, or company is to muster twice a year, at least.

**MUSTER, False**. See **FALSE**.

**MUSTER-master-general**, or *Commissary-general of Musters*, is an officer in the army, who takes account of every regiment, their number, horses, arms, &c. In the ordinances of war made by king Henry V. this officer is mentioned, and his power and duty are described. See **COMMISSARY**.

**MUSTER Rolls** are lists of the soldiers in every troop, company, regiment, &c. delivered by the captains to the commissary: by which they are paid, and the strength of the regiment known.

**MUSTERED of Record** (stat. 18 Hen. VI.) denotes a being enrolled in the number of the king's soldiers.

**MUSTERING**, in *Sea Language*, is the act of calling over a list of the whole ship's company, or any particular detachment thereof, who are accordingly summoned to answer by their names on the occasion.

**MUSTEWAH**, in *Geography*, a mountain of Algiers; 40 miles S. of Constantina.

**MUSTYGANNIM**, **MOSTAGAN**, or *Mostaganin*, a seaport town of Algiers, in the province of Mascara or Tremecen, supposed to be the "Cartenna" of Pliny and Ptolemy. It is built in the form of a theatre, with a full prospect of the sea; but in every other direction it is surrounded with hills. In one of the vacant spaces about the middle of it are the remains of a Moorish castle. The N.W. corner of the city, which overlooks the port, is surrounded with a wall of hewn stone; and has another castle built in a more regular manner, defended by a Turkish garrison; however, the chief security of the place depends upon the citadel, which is built on one of the adjoining eminences, and commands both the city and country. The town is well supplied with water, and its haven is commodious and safe. Nevertheless, though it is one of the largest towns in the province of Mascara, it is neither beautiful, nor has any flourishing trade or manufacture. Behind it rises mount Magaraba, so called from a people of that name, who inhabit it. This mount extends itself



itself about 10 leagues from E. to W. along the Mediterranean coast. The occupiers live in tents, feed a great multitude of flocks, and pay 12,000 crowns yearly to the dey of Algiers. The town is distant eight miles N.E. from Tremecen. N. lat.  $36^{\circ}6'$ . E. long.  $0^{\circ}30'$ .

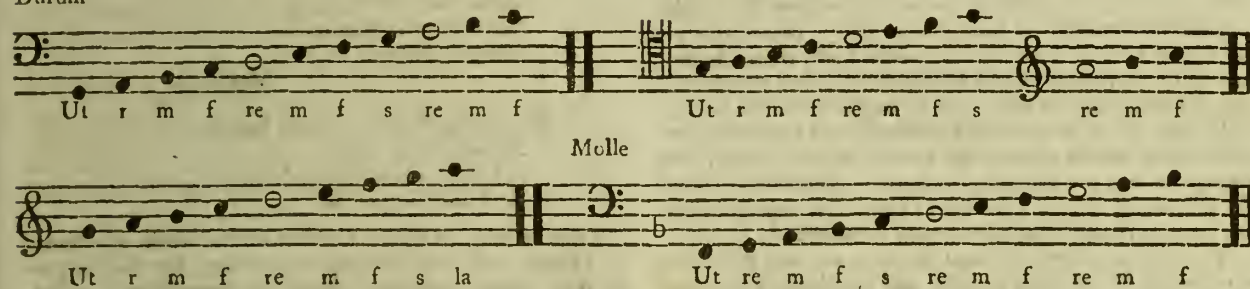
MUSUELA, a town of Spain, in the province of Jaen, on the left bank of the Guadalquivir; seven miles N.E. of Jaen.

MUSUMA, a town of Japan, in the island of Niphon; 63 miles W. of Meaco.

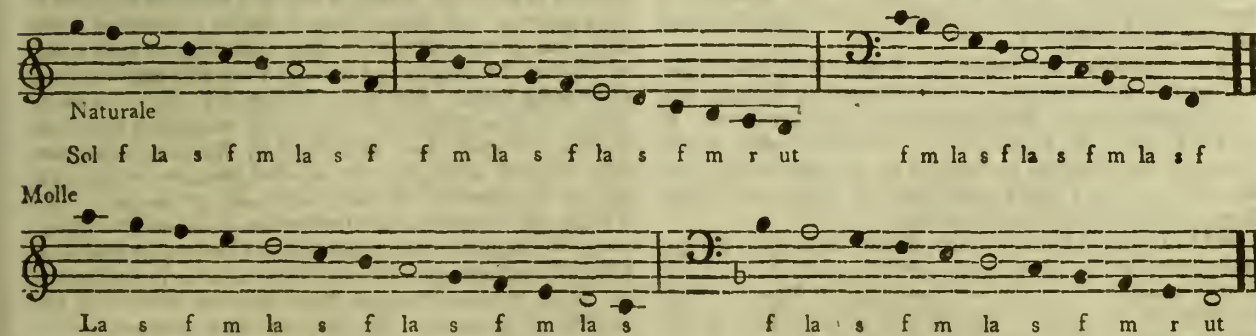
MUSURUS, MARCUS, in *Biography*, a modern Greek, was born in the isle of Crete about the year 1481; from thence he went to Italy, where he studied under the learned John Lafcaris, and by an almost incessant application he acquired a thorough knowledge of Greek and Latin literature. In the Latin he was thought by Erasmus to be better skilled than almost any other Greek, excepting his preceptor, and Theodore Gaza. From 1503 to 1509, he was Greek professor in the university of Padua, where his salary was trifling, and his labour very great. When the university of Padua was broken up by the wars, Musurus went to Venice, where he publicly taught Greek many years to a numerous audience with great applause. At the same time he assisted Aldus Manutius in his editions of the Greek writers, many of which he corrected, prefixing to them Greek epigrams or prefaces of his own composition. Of these, his elegy prefixed to the Aldine edition of Plato, in 1513, is the most celebrated. In 1516, he was invited to Rome by Leo XI., who presented him with the archbishopric of Malvasia, but he enjoyed this dignity only a short time. He died in the following year, at the early age of thirty-six, just at the period when the highest expectations were entertained by the learned of his future services in the cause of literature. Of his epigrams, several have been published, with his Encomium of Plato.

MUT, in *Geography*, a town of Hindoostan, in Bahar; 25 miles S. of Patna.

Durum



The same series of sounds in the octave and 15th would have the same names.



See SOLMISATION, GAMMUT, and HARMONIC HAND.

MUTA-

MUT-Bedr, a town of Egypt, on the E. branch of the Nile; four miles S.W. of Manfora.

MUT-Kamar, a town of Egypt, on the E. branch of the Nile; 23 miles N. of Cairo.

MUT-el-Koli, a town of Egypt; 12 miles S. of Damietta.

MUTABILIS LAPIS, in *Natural History*, a name given by some to the semi-pellucid gem, more commonly called *oculus mundi*.

MUTABILITY is opposed to *immutability*.

MUTARE ARMA. See ARMA.

MUTATION, the act of changing, or sometimes the change itself.

It is one of the laws of nature, that the mutation of motion is ever proportional to the moving force impressed. See NATURE and MOTION.

MUTATIONS, in *Musick*, are the changes in the names of the notes in solfaing by the hexachords. In a series of six sounds, in the hexachord of *G durum*, or *G* with a major 3d, no change of name is required ascending or descending. *Ut, or do, re, mi, fa, sol, la*: *la, sol, fa, mi, re, do*, are the names of all the intervals in that compass; but in completing the octave, which cannot be done without encroaching on the hexachord of *C natural*, the mutations begin. It is the same in the hexachord of *C*; when a 7th sound is wanted, it must, if minor or flat, belong to the molle hexachord of *F*; if major, or natural, to *G*. See HEXACHORDS.

Dominico Pedro Ccrone, in an elaborate work, written in the Spanish language, and published at Naples 1613, has taken great pains to throw a light upon the subject, which he says he found, by his own experience, extremely dark and difficult. He minutely goes through all the seven hexachords, shews their connection with each other, and gives scales to manifest the mutations, which, in ascending beyond a hexachord, are made by the syllable *re*, and, in descending, by *la*.



MUTATIONES, among the Romans, post stages, or places where the public couriers were supplied with fresh horses.

The mutationes were wholly designed for the use of these couriers, or messengers of state; in which respect they differed from *mansiones*.

MUTBUNNY, in *Geography*, a town of Hindoostan, in Bahar; 23 miles S.S.E. of Bettiah. N. lat. 26° 28'. E. long. 85° 2'.—Also, a town of Hindoostan, in Bahar; 15 miles N.E. of Durbungah. N. lat. 26° 20'. E. long. 86° 16'.

MUTCHANG, a town of Meckley; 104 miles S.S.E. of Munnypour.

MUTCHKIN, a liquid measure used in Scotland; it contains four gills, and is the fourth part of a Scotch pint. See PINT, MEASURE, &c.

MUTE, DUMB, denotes a person that cannot speak, or has not the use of speech. See DUMB.

Mutes and dwarfs make their fortune in the grand signior's seraglio. The mutes serve as executioners to take off persons of the first rank.

MUTE, in *Law*, a person that stands dumb or speechless, when he ought to answer or plead.

A prisoner may stand mute, two ways. 1. When he speaks not at all: in which case it is inquired, whether he stand mute of malice, or by the act of God; if by the latter, then the judge, *ex officio*, ought to inquire whether he be the same person; and of all other pleas, which he might have pleaded if he had not stood mute. 2. When he pleads not directly, or will not put himself upon the inquest to be tried. If he be found to be obstinately mute, then, if it be on an indictment of high treason, it is clearly settled that standing mute is equivalent to a conviction, and he shall receive the same judgment and execution. So likewise, in petty larceny, and in all misdemeanors, standing mute is equivalent to conviction. But in appeals or indictments for other felonies, or petit treason, it was the custom till of late not to consider him convicted, so as to pass judgment for the felony; but for his obstinacy he was to receive the terrible sentence of penance, or *paine forte et dure*. Before this was pronounced, the prisoner was allowed not only *trina admonitio*, but also a convenient respite for a few hours, and the sentence was distinctly read to him, that he might know his danger; and, after all, if he continued obstinate, and his offence was clergyable, he was allowed the benefit of his clergy, even though he was too stubborn to pray it. But in this respect the law is now altered; for by 12 Geo. III. cap. 20. standing mute in felony or piracy is made a conviction.

To advise a prisoner to stand mute is an high misprision, a contempt of the king's court, and punishable by fine and imprisonment.

MUTE, in *Grammar*, a letter which is not sounded, or heard in the pronunciation; or a letter which yields no sound of itself, and without a vowel.

The consonants are ordinarily distinguished into mutes, and liquids or semi-vowels. See CONSONANT, LIQUID, &c.

The mutes in the English alphabet are eleven; *viz.* B, C, D, F, G, J, K, P, Q, T, V. They are called mutes, because a liquid cannot be sounded in the same syllable before them, as *rpo*; but a mute may be pronounced in the same syllable before a liquid, as *pro*.

MUTEFERRIRA, a body of horse kept up in Egypt, in the service of the grand signior; these, with the chaoufes, were originally the guards of the sultans of Egypt. This is a body of the greatest dignity, and is expressed by the word, which signifies a chosen people.

MUTHAY, in *Ichthyology*, a species of fish resembling eels,

in Hudson's Bay. They are principally caught in winter with hooks, through openings made in the ice.

MÜTHEL, JOHANN GODFRIED, in *Biography*, a German musician settled at Riga, who, though but little known in his own country, was a musician of great abilities both as a composer and performer. He was a worthy disciple of Sebastian Bach, and had resided some time at Schwerin before he went to Riga. When a student at Leipzig, he vanquished all the difficulties to be found in the lessons and organ pieces of his master and of Handel; then he seems to have made Emanuel Bach his model of composition. Should a young professor on keyed-instruments, who had subdued all the difficulties of his predecessors, lament, like another Alexander, that nothing more remained to conquer, we would recommend to him, as an exercise for patience and perseverance, the compositions of Müthel, and perhaps Beethoven, which are so full of novelty, taste, grace, and masterly designs, that we should not hesitate to rank them among the greatest productions of the last and present age.

The first of Müthel's works that we can trace were odes, printed at Hamburg in 1759; the rest, which are all for the harpsichord, appeared in the following order: three sonatas and two airs, with twelve variations, Nuremberg 1760. Two concertos, printed by Hartknock, Riga and Mittau, 1767. Duetto for two clavichords, two harpsichords, or two piano fortes, printed by Hartknock, Riga, 1771.

Though the style of this composer resembles that of Emanuel Bach more than any other, the passages are entirely his own, and reflect as much honour on his head as his hand. Indeed his productions abound with difficulties, which to common hearers, as well as common players, must, thirty years ago, have appeared too studied and elaborate; for even his accompaniments are so charged as to require performers for each instrument of equal abilities to his own, which is expecting too much, in musicians of this nether world.

“ Odi s'io son finccio ;  
Ancor mi sembra bella,  
Ma non mi sembra quella  
Che paragon non ha.”

Metastasio.

“ Nor do thy strains, though sweet,  
At present so excel,  
As those which blame defeat,  
And have no parallel.”

From having, in 1772, seen few of the works of Vanhal or Haydn, and none of Mozart, except his childish productions which Bremner printed on speculation; we admired the taste, invention, high finishing, complication, and equality of grace and melody which he gave to all the parts of his concertos, and praised them so highly; speaking at the same time of the difficulty of their execution, in such a way as frightened students, and perhaps some able masters, from attempting them. But after having lost them for many years, on recovering and deliberately examining them, we find the two great laws laid down by Rousseau, and generally adopted, infringed: the want of *symmetry* and *phraseology* in the number of bars, and *unity of melody*. But “ what can we reason, but from what we know?” These laws, we suppose, were unknown in Germany at this time. Müthel's passages are new and difficult; more in the style of his fellow student Emanuel Bach than any other; but less phrased and graceful. His closes are now become antique. His graces are misapplied. Shakes and trills on the first and last notes of a bar have been long banished. Indeed, we believe



lieve they have had no admission in the vocal music of Italy since the time of Piccini and Sacchini, who never admitted them. But the elaboration of his several parts surprises us now as much as ever; though the difficulty of their execution, in some measure, arises from the want of phraseology and punctuation. How difficult it would be to read Milton's blank verse without stops; or even Dryden's and Pope's heroic verse, if printed like prose! We should like to see his concertos scored. He found, doubtless, that his duet could not be executed from single parts; and it has been only in looking at single parts of his concertos that we have discovered what will now be called defects, from laws posterior to the time when Mützel's compositions were printed. Rousseau would admire his passages; but say, that simplicity was wanting. In "La Passione di Jomelli," which we sent him, he said it was, "a composition worthy of being ranked with the productions of Pergolesi, except in *simplicity*;" and he was right.

After having ranked Mützel so high thirty-four years ago, it is necessary that we should assign reasons for the warmth of our eulogy. If judged by laws which did not exist in 1772, or at least were not established throughout Europe, the censure might doubtless admit of some extenuation. Grace, the principal feature in music, (and perhaps in all the fine arts,) depends on phraseology, symmetry, and correspondent arrangement of passages with respect to time. This frequently happened by chance in Italy. We believe it was constant and instinctive in Corelli; but not from reflection or principle. Handel, from feeling, seldom was deficient in phraseology.

Both Mützel's concertos were published in 1767: Rousseau's *Lettre sur la Musique Française* in 1751, sixteen years anterior. His first, *concerto concertato*, consists of cembalo, two violins, tenor and base. The second of *cembalo concerto*, accompanied by two violins, two bassoons or violoncelli, tenor, and ripieno base.

We think Mützel much inferior to Emanuel Bach in grace; but superior to him in the solo parts given to the harpsichord, in which there are many common and unmeaning divisions; which, after the refinement and invention of his *sonatinas*, as he calls them, dedicated to the princess Emilia of Prussia, surprised and disappointed us. But in no one of Mützel's solo parts in his concertos is there a single common or vulgar passage to be found. He is, we believe, the first who wrote appoggiature in large notes, the exact length they should be played. The double dot, if not the first who used it in Germany, he was, at least, the second after Emanuel Bach. We used it in 1760 in a book of lessons, before we had seen the productions of either.

Having made these remarks on his concertos, and recovered his duet for two piano fortes, harpsichords, or clavi-chords, printed in a four-staff score, we shall examine it with equal rigour.

Rousseau saw the too great research and want of simplicity in Jomelli's *Miserere*, and in the *Mattutina di morti* of Perez. Our friend Rousseau, (as a writer on music,) pushed *simplicity*, and *unity of melody*, perhaps too far: there are effects produced by harmony and modulation, occasionally, quite independent of melody.

Mützel's works are become very scarce, and, on account of their difficulty, were never much known. We cannot afford plates for examples of what we now object to him; and these remarks are added to his article here to account for our unqualified praise at one period of refinement in the art of music, and confessing him not free from censure at another. The duet is still a curious composition, manifesting a powerful hand, great fertility of invention, and a taste and

refinement unknown, at the time, to all Europe, except to the Bach school.

MUTILATED CORNICHE. See CORNICHE.

MUTILATED Medals. See MEDAL.

MUTILATED Roof. See ROOF.

MUTILATION, the retrenching, or cutting away, any member of the body. See MAHEM.

The use of the word is also extended to statues and buildings, where any part is wanting, or the projecture of any member, as a cornice, or an impost, is broken off.

MUTILATION is sometimes also used in a more immediate manner, for castration.

MUTILLA, in *Natural History*, a genus of insects of the order Hymenoptera. The generic character is, antennæ filiform; feelers four, of which the articulations are obconic, seated on the tip of the lip; the jaw is membranaceous at the tip; the lip is projecting obconic; in most species there are no wings; the body is pubescent; the thorax retuse behind; the sting is pungent and concealed. There are nearly forty

#### Species.

HELVOLA. The colour of this species is pale claret-red; the abdomen is cylindrical, pubescent at the tip; and the thighs are compressed. It inhabits the Cape of Good Hope.

COCCINEA. Scarlet; abdomen is marked with a black belt. It inhabits North America. The wings are black, but in general it is an apterous insect.

ANTIGUENSIS. This species is scarlet; tip of the abdomen black, with white streaks. It inhabits Antigua.

GUINEENSIS. Thorax subspinous, variolous, piceous; abdomen black, with two white dots, and an interrupted band. It inhabits Guinea, and is large.

DIADEMA. Black; abdomen with two large yellow dots at the base, and an interrupted band in the middle; the tip has a white line. It is found in Surinam, and is large.

AMERICANA. Black; abdomen with four yellowish spots, and three white lines. Found in South America.

FORMICARIA. Black; abdomen with a line of whitish dots down the back. It inhabits New Holland. There is a specimen of it in the museum of sir J. Banks.

EXULANS. Black; abdomen with two yellow dots at the base, an interrupted streak in the middle, and a line behind. It inhabits America.

AURATA. Blueish; abdomen with a large spot. Inhabits New Holland, and may be seen in sir J. Banks' museum.

\*EUROPEA. Black; thorax rufous; segments of the abdomen with white margins. This is described in Mr Donovan's interesting work on English insects. The abdomen has two white bands, the second is interrupted.

RUFICORNIS. Black; antennæ rufous; tail whitish. Found in New Holland. A specimen is preserved in sir J. Banks' museum.

ATRATA. Black; upper part of the thorax rufous; abdomen blue, with two white bands. It is an African insect.

MAURA. Black; abdomen with four white spots; thorax rufous. Found in divers parts of Europe.

HUNGARICA. Black; front cinereous; thorax rufous; abdomen with six white dots, and a streak behind. Found in Saxony.

CORONATA. Black; front cinereous; thorax rufous; abdomen with a silvery white dot, with two streaks. Found in Saxony.

HALENSIS.



**HALENSIS.** Hairy and black; thorax rufous; abdomen with two white dots, and a band behind. It inhabits also Saxony.

**ARENARIA.** Hairy, black; front and back of the thorax white; abdomen with four white spots. Found in the sandy plains of Spain.

**BARBARY.** Hairy and black; fore-part of the thorax white; abdomen with two white bands. It inhabits Barbary.

**ERHIPPIUM.** Hairy and black; thorax rufous on the back. Inhabits Saxony.

**ITALICA.** Hairy and black; second segment of the abdomen rufous. Inhabits Italy.

**PÆDEMONTANA.** Hairy and black; fore-part of the thorax cinereous; abdomen with two cinereous bands; the second segment rufous. Inhabits Italy, and is as big again as the *M. italica*.

**VERSCOLOR.** Abdomen black at each end, and rufous in the middle, with a white band, in which is a black dot. It inhabits America.

**REGALIS.** Hairy, black; front cinereous; thorax rufous; abdomen with four white dots, the middle one elongated. Found in Hungary.

**RUFICOLLIS.** Hairy and black; thorax rufous. Found in Italy.

**CILIATA.** Hairy, black; thorax rufous; segments of the abdomen edged with a cinereous fringe. It inhabits Saxony.

**ERYTHROCEPHALA.** Hairy and black; head rufous; abdomen with three gold bands.

**GLABRATA.** Glabrous, black; thorax and abdomen rufous beneath. It is found in the East, and is a small insect.

**RUFIPES.** This species is hairy and black; antennæ, thorax, and legs rufous; abdomen with a white dot, and two approximate bands. It inhabits Saxony, and is small.

**MELANOCEPHALA.** Hairy and rufous; head and tip of the abdomen black. It inhabits France.

**NIGRIPES.** Rufous; the tail is black, with approximate white streaks; legs black. It inhabits the East.

**INDICA.** Black; abdomen with a pale yellow band and white line. Found in the East Indies and South America.

**BRUTIA.** Black; thorax rufous; abdomen with six silvery-white spots and band. It inhabits Calabria.

**LITTORALIS.** Black; thorax rufous; fore-part of the abdomen with a two-lobed white spot; the five hind segments edged with white. This also is found in Calabria.

**SPINOSA.** Yellowish, varied with black; thorax with four spines on each side; the second segment of the abdomen has two testaceous spots. It inhabits America.

**CEPHATOTES.** Head large and black, spinous on each side; abdomen with a gold spot, and three white interrupted bands. Found in Georgia.

**BIFASCIATA.** Black; head and thorax red; abdomen with two red bands; the wings are violet-black. Found in New York.

**6-PUNCTATA.** Black; thorax subcylindrical, immaculate; abdomen with three whitish dots on each side. It inhabits Africa.

**6-MACULATA.** Black; thorax rufous above; abdomen with a row of three whitish spots on each side. It inhabits India.

**MUTILUS**, the name given by some to the common musc.

**MUTINA**, in *Ancient Geography*, a municipal city of

Gallia Cispadana, situated towards the east, and near Scultena. It received a Roman colony about the year 572; now *Modena*, which see.

**MUTINY**, in a *Military Sense*, denotes an insurrection against authority.

An act is annually passed by parliament, called the mutiny act, to punish mutiny and desertion, and for the better payment of the army and their quarters.

This regulates the manner in which they are to be dispersed among the several inn-keepers and victuallers through the kingdom, and establishes a law martial for their government. By this, besides other things comprised in the *ARTICLES of War*, enumerated and enforced in this act, (see 49 Geo. III. c. 12.) it is enacted, that if any officer or soldier shall excite, or join any mutiny, or, knowing of it, shall not give notice to the commanding officer; or shall desert, or list in any other regiment, or sleep upon his post, or leave it before he is relieved, or hold correspondence with a rebel or an enemy, or strike or use violence to his superior officer, or shall disobey his lawful commands; such offender shall suffer such punishment as a court-martial shall inflict, though it extend to death itself.

After the abdication of king James II., and the accession of king William III., the military code obtained the sanction of parliament, though passed only from year to year, under the denomination of the mutiny act. The first of these acts passed on the 12th of April 1689, and was to continue in force to the 10th of November in the same year. See *ARMY*.

**MUTIS**, JOSEPH CELESTINE, in *Biography*, a learned Spanish Physician and Divine, celebrated for his botanical discoveries in the country of New Granada, and no less distinguished by the excellence of his character, than the extent and variety of his knowledge, was born at Cadiz in 1734, of an Italian father and a Spanish mother. His parents placed him under the tuition of Don Pedro Virgilio, Principal Navy Surgeon, and Professor in the Military Academy of Cadiz, honourably mentioned in Loeßling's letters to Linnaeus, *It. Hiss.* 97. Mutis devoted himself to the study of medicine, till his 21st year, when he entered at the university of Seville. His late preceptor being soon afterwards summoned, with other eminent medical practitioners, to a consultation upon the declining health of Ferdinand VI. and his queen, Mutis was chosen to accompany him to Madrid. There the young man procured many friends, and much reputation, by the talents he displayed in various branches of knowledge connected with his profession, and was especially patronized by the minister, Wall, who offered him a pension to enable him to travel. This scheme was defeated by the death of the king, and change in the ministry; but Mutis obtained a professorship of anatomy, and signalized himself by his physiological knowledge. He turned his mind to the foundation of an Academy of Sciences at Madrid, led by the growing taste for natural knowledge of all kinds, which the youth of Spain, like those of other countries, had, for some time past, imbibed in the course of their medical studies under Boerhaave. The fame of that great man attracted, from every quarter of the globe, those who were desirous of improvement or distinction in medical or philosophical knowledge. Thus did Holland, as became the seat of light, liberality, and science, return good for evil, to the very country which had designed its ruin, but whose disappointed aim thus redounded to their mutual benefit. The voyage of Juan and Ulloa to Peru, and the knowledge and taste which had in consequence for many years been diffused, in a certain circle, even among the Spaniards, now gave that nation a degree of scientific rank in Europe.



Some of its ministers were wise enough to see the probable advantages to be derived from its natural resources in the new world, if the light of science were to be directed that way. And although the Spanish throne was encumbered and polluted with the very dregs of royal fatuity and depravity, the baleful withering scyons of a rotten worn-out stock, swarming with the vermin which there find their natural aliment; still the influence of some honest and patriotic characters was occasionally felt. We have mentioned the invitation given to Linnæus to settle in Spain, and the mission of his pupil Loeßing to South America. (See LINNÆUS and LOEFLINGIA.) In 1760, the Marquis Della Vega, being appointed Viceroy of New Granada, solicited Mutis to accompany him, as his physician. This proposal was joyfully accepted; not probably with any view to a final settlement in that distant region, but rather as a step to future advancement at home, after his curiosity had been in some measure gratified abroad.

Previous to his departure, the subject of our memoir spent some time with his friends at Cadiz, where it fortunately happened that the Swedish consul, Mr. Bellman, was a man of information and taste in the sciences in which his countrymen have always been pre-eminent. This gentleman procured for Mutis some of the works of Linnæus, and introduced him to an epistolary correspondence with that great man, which continued till his death in 1778, of which melancholy event an account was transmitted to Mutis that year by the younger Linnæus, in a letter, of which a copy is now before us. The writer takes an opportunity of describing to his learned correspondent the wonders of the *Hedyarum gyrans*, then just raised in the stove at Upsal.

On his arrival at Santa Fé de Bogotá, the capital of New Granada, our ardent and intelligent young philosopher immediately anticipated the probability of his communicating, as well as acquiring, knowledge. By the permission of the Viceroy, he undertook to introduce the mathematics as a branch of study in the university; and his lectures on that subject were received with enthusiastic attention and admiration. But it was not to be expected that the monkish professors should equally relish such novelties. To acquire or to diffuse knowledge was neither their aim nor their ambition, and it was certainly not for their interest nor their peace. On this subject the Christian church, in every country and in every age, has been uniformly and steadily consistent, exactly in proportion to its degree of corruption. Yet we mean not to attribute even this species of sagacity or vigilance to the monks of Bogotá. It was natural that the hardy adventurer, who disturbed their dreams and scared away their slumbers, should, like those who first roused the bats and owls in the caves of Elephanta, be bespattered with their filth. They declared, what perhaps they believed, that Mutis was a conjurer, who, by an alliance with the devil, taught a magical, divinatory, and diabolical art, unwarranted by law and prohibited by religion. "How else," said they, "could a mortal measure the distance of the sun or of the moon, or foretell eclipses?" Their representations were not without effect. Some well-meaning, but not well-informed, persons forbade their children to frequent the schools of a necromancer, and thus the usefulness of the new professor was limited, and his fame in part eclipsed; for such prohibitions could not fail to foster a certain mass of prejudice, against him and the more enlightened party, which daily increased under his genial influence. Nor was the power of the inquisition allowed to be idle in so holy and just a cause. From this however the higher power of the Viceroy was able to shield the intended victim, who gradually rose superior to prejudice and persecution, and was

at length, by the authority of the Spanish government, established Professor of Philosophy, Mathematics, and Natural History, at Santa Fé. It is to be presumed that his own character and conduct were, meanwhile, irreproachable, conformable to the purity of his principles, and the exemplary tenor of his subsequent life, against which malice, even in the days of his adversity, never dared again to aim its sting.

Mutis, like a true patriot, was anxious to turn his own knowledge to the practical service of his country. Considering the gold and silver mines as the most important national objects in Mexico and Peru, he directed his attention to a more successful mode than had hitherto been practised, for working the mines of the last-mentioned metal. Gold is procured chiefly by patience and manual labour, in a metallic state, from the sands of the rivulets; but silver can be obtained by chemical means only, from recondite sources in the bowels of the mountains. Its mines are not only, like those of gold, a sort of lottery, but to derive a due profit from its ores, requires knowledge and observation, as well as labour and considerable expence. All mining countries abound with traditions of their former riches, and liberal conjectures respecting their latent stores. By these our philosopher was misled. He spent many years of indefatigable application, and exhausted his pecuniary resources, with the zeal and the disappointment of an alchemist. He reaped indeed abundance of experience and of natural knowledge, as he explored the recesses of the Cordilleras, and investigated the productions of their soil, as well as the secrets of their geology; but his worldly prospects were ruined. These he might have retrieved by accepting some civil employment or magistracy, offered him by his constant friend the Viceroy, to whose proposals of this kind he is reported to have answered, that "he aspired after no government, but that of himself, nor any authority but over his own passions." In conformity to such sentiments, he found the clerical profession more congenial to his feelings; and to that he for a while devoted himself, as it appears, exclusively, residing for some time in the capital. But a miner seldom gives up his pursuit, and the former propensities of Mutis revived, as he anticipated afresh the means of indulging them. His success was fruitless, as before, with regard to its original object, but not as to the future happiness and utility of his life. The residence he had chosen, for the prosecution of his purpose, was fortunately one of the most delightful in the world, at Sapo, in the government of Mariquita. His house stood on a rising ground, commanding the most enchanting prospects, over an extensive valley, watered by the meandering river Luisa. The groves of palm-trees, and the rural scenery of the valley, are encompassed by a chain of hills, whose proud tops rise one above another, till they are lost in the clouds. Here our philosopher enjoyed a pure air and temperate climate, equally remote from the cold of the mountains, and the oppressive atmosphere of the vale below. In this sequestered abode he divided his time between the superintendence of the mines, and the study of natural history; while he fulfilled his clerical duties, and benefited his neighbours by the exercise of his original profession. He was soon consoled for his disappointment in the first of these objects, by the general esteem and respect which his character and conduct inspired; inasmuch that he resigned himself for life to this delightful retirement, without a sigh for the vanities or the bustle of the world. Here botany constituted his most favourite amusement. The country within his reach was found rich in plants, of peculiar beauty as well as singularity, which indeed may be said in general of all the vegetable pro-



ductions of New Mexico. Splendid compound flowers, shrubs whose shining leaves are invested beneath with a dense woolly clothing, giving a great peculiarity as well as richness of habit, are striking characteristics of the Mexican Flora; which is further enriched by no small proportion of the magnificent tribe of Palms. To these last Mutis paid particular attention; but the history of them, which he is said to have prepared, has, as yet, not been given to the public. His correspondence with Linnæus was as frequent as circumstances would permit, but it appears that many of their letters and communications never reached their respective destinations. To him he sent numerous dried specimens, many manuscript descriptions, and a folio volume of Indian ink drawings, quoted in the *Supplementum*. Among the specimens were several of the noble *Mutisia*, first described in that work, to which several new species have since been added; see the next article.

On the 12th of September 1778, Mutis addressed a long and very interesting letter to the younger Linnæus, in answer to that in which the latter had informed him of his father's decease. By this it appears that he had not settled at Sapo till the year 1776. He complains of having suffered much, in the following season, from the attack of an insect of the *Oestrus*, or Gad-fly, kind, very common in that neighbourhood, which, having lodged itself in his leg, produced a tumour. To this he applied the juice of tobacco, with the milk of a plant which he terms *Musa guineensis*. But the application, though usual among the country people, nearly cost him his life, by producing a violent inflammation and suppuration. He gives the following very curious account of the parent fly. "It is not larger than the *Musca domestica*. The abdomen is covered with a series of little tubes, resembling a wasp's nest, in which above fifty minute *larvæ* are lodged. The likeness of this fly to what is so very common and harmless, causes its pernicious design not to be suspected as it settles on the human body, till its brood has, with great celerity, found a lodgment in the skin. It however its attack be speedily perceived, the evil may be removed without difficulty or danger."

The year 1778 makes an epocha in the life of Mutis. That year a new archbishop, Don Antonio Caballero y Gorgora, arrived at Santa Fé, who, among the numerous letters of congratulation from the subordinate clergy on his arrival, had penetration to discover, and good sense enough to admire, in that of Mutis, something very superior to the rest. He visited the writer in his retirement, and his favourable prepossessions were confirmed. He determined that such a man should be made useful to his country; and as Mutis had embarrassed his circumstances afresh by his mining projects, the good archbishop obtained, from the government at home, a sum for the payment of his debts, a handsome pension, and the appointments of Botanist and Astronomer to the king. He now became the head of a botanical school as it were, the superintendant of a tribe of botanical adventurers, employed by the Spanish government to investigate the plants of America. From their labours have originated several publications, especially the splendid *Flora Peruviana*; and the names of Escallón, Pavón, Ruiz, Valenzuela, and Zea, are now celebrated in the botanical history of that country. Mutis, attended by some of his pupils, and several draughtsmen, made a tour through the kingdom of New Granada in 1783. By his diligence much new light was thrown upon the history of the Peruvian bark, or *Cinchona*, and its various species, as there had already been upon that of the Balm of Peru, the Ipecacuanha, the Elastic gum, &c. He also taught his countrymen the culture and the value of Indigo. His health having suffered

from the climate of Mariquita, he was directed to repair to Santa Fé, and to fix on some of his pupils, whose youth and constitutions might be more adequate to such labours. In 1791 or 1792, Zea was sent to collect living plants and seeds, for the establishment of a public botanic garden at Santa Fé. But in the political ferment of that period, new inquisitors arose, as wise as those who had condemned Mutis for a magician. The innocent Zea was seized, and laid in prison, under the charge of some rebellious conspiracy, till the year 1797, when, with other victims of malice or folly, he was brought over to Spain to be tried. Their innocence was readily proved, they were honourably acquitted, and each was reinstated in his former situation. Mutis, with his accustomed vigilance, took advantage of this opportunity to visit Paris, to consult with Jussieu, and the other eminent botanists of that capital, concerning the composition of a *Flora Bogotensis*, and to make himself master of all the new improvements and discoveries. He remained at Paris till 1801, when he went back to Madrid. Whether he subsequently returned to his native country, we know not, but in 1804 he was appointed to the Professorship of Botany, and superintendence of the royal garden at Madrid, in the place of Cavanilles, whose lamented death happened that year.

The venerable Mutis was now established in fame and reputation, but his advancing age made repose in some measure necessary. He continued however to be serviceable to the government of his native country, and to the prosperity of that in which he had so long been naturalized. He was regularly consulted by the Viceroy, on all difficult and important questions, and conscious that the happiness of the people was the real interest as well as duty of the government, he made it the leading object of all his advice. We hesitate not in the case of such a man to conclude, that his richest temporal reward was the prosperity of those around him, and the affection and veneration with which they amply returned his cares. He lived to an advanced age, but of the precise date of his death we are not informed. A pleasing and well executed portrait of this excellent man, his head encircled with a diadem of stars, is prefixed to one of the late splendid botanical publications of his countrymen, which we have occasionally seen, but which is not at present within our reach. We ought not to conclude this article without recording, that Mutis was the means of introducing strawberries into the country of New Granada. He mentions in a letter to Linnæus, that, on his departure from Spain, he advised the Viceroy to take with him some of that fruit in a dried state, the seeds of which vegetated in America, and the subsequent propagation and success of the plant were truly wonderful. He adds that the tables were daily furnished at Santa Fé with this delicious fruit, and with other products of the kitchen-garden, all the year round, which the Italians might envy. Our preceding account is taken from a paper by Don Pedro d'Oribe y Vargas, in Sims and König's *Annals of Botany*, v. 1. 490, as well as from the manuscript letters of Mutis himself. S.

MUTISIA, in *Botany*, was so named by Linnæus, in honour of Don Joseph Celestine Mutis, Spanish ecclesiastic, the discoverer of this plant, and of many other very remarkable ones, in the Spanish settlements of America: see the preceding article.—Linn. Suppl. 57. Schreb. 557. Willd. Sp. Pl. v. 3. 2068. Mart. Mill. Dict. v. 3. Juss. 178. Lamarck Illustr. t. 690. Cavan. Ic. v. 5. 67.—Class and order, *Syngnesia Polygamia-superflua*. Nat. Ord. *Compositæ Discoideæ*, Linn. *Corymbifera*, Juss.

Gen. Ch. *Common Calyx* oblong, cylindrical, imbricated with



with lanceolate scales, the inner ones longest. *Cor.* compound, radiated. Florets of the disk thrice as numerous as those of the radius, tubular, two-lipped; the inner lip in two deep, linear, equal segments; outer ligulate, three-toothed. Florets of the radius about eight; their claw linear, erect; limb horizontal, elliptical, three-toothed, often bristly at its base. *Stam.* Filaments in the florets of the disk five, capillary; anthers united into a cylinder, each with a pair of dependent bristles at its base: in the florets of the disk sometimes present in an imperfect state. *Pist.* Germen in all the florets short; style thread-shaped; stigma cloven, acute. *Peric.* none, except the permanent calyx. *Seeds* oblong, slightly quadrangular. *Down* sessile, feathery. *Recept.* naked.

*Eff. Ch.* Receptacle naked. Seed-down feathery. Calyx cylindrical, imbricated. Florets of the radius elliptical, three-toothed; those of the disk two-lipped. Anthers with a pair of bristles at their base.

Obf. Cavanilles remarks, that he once found the receptacle slightly villous, in what he deemed a variety of his *M. inflexa*. He also, in mentioning the bristles which are attached to the base of the anthers, asserts that no preceding author had noticed that character. We find it however in the Linnæan description. The florets of the disk were first properly described by Cavanilles, as two-lipped, a character scarcely known perhaps but in some American *Syngenesia*.

\* *Leaves pinnate.*

1. *M. Clematis*. Woolly-leaved Mutisia. Linn. Suppl. 373. Willd. n. 1. Cavan. Ic. v. 5. 63. t. 492.—Leaves pinnate, with tendrils; leaflets elliptical, densely woolly beneath.—Discovered by Mutis in the country of New Granada, in the year 1762. According to Cavanilles, it was gathered by Lewis Née, in stony places, not far from San Buenaventura el viejo, in Peru, flowering in June and July. This noble plant does not appear to have been seen alive in Europe, any more than the rest. Fine specimens are in the Linnæan herbarium. The *stem* is shrubby, branched, leafy, striated, climbing by means of tendrils to a considerable extent; very woolly when young. *Leaves* alternate, pinnate; their common stalks ending in a long three-cleft spiral tendril; leaflets about four pair, nearly sessile, not quite opposite, elliptical, or ovate-oblong, obtuse, entire, from one to two inches in length, nearly one in breadth; their upper surface clothed when young with deciduous wool, but when fully grown green, naked, and smooth, except the rib and veins; the under densely covered at all times with thick soft matted wool, reddish or rusty in the dried plant; but probably white when fresh. A similar woolliness, but partly deciduous, is found on the *branches, stalks, and calyx*. *Stipulas* ovate, in pairs at the bottom of the common foot-stalk, like the leaflets, but much smaller. *Flower-stalks* axillary, solitary, single-flowered, shorter than the leaves, bearing one or two linear *bracteas*. *Flowers* dark red, or purple, with conspicuous yellow anthers, very handsome, vying with the *Tagetes*, or the *Dahlia*, but more remarkable for their imbricated woolly calyx, two inches in length. The claws of the marginal *florets* are of the same length, their limb one inch.

2. *M. peduncularis*. Long-stalked Mutisia. Cavan. Ic. v. 5. 62. t. 491. Willd. n. 2.—Leaves pinnate, with tendrils; leaflets lanceolate, smooth, alternate. *Flower-stalks* axillary, very long.—Gathered by L. Née, in the same part of Peru with the preceding, flowering in July. This is smooth in all its parts. The *leaflets* are ten or twelve on each side of the common stalk, alternate, lanceolate, acute, somewhat decurrent, near an inch and half long, half an

inch wide. *Tendril* three-cleft. *Flower-stalks* axillary, solitary, a foot long, much exceeding the leaves, each bearing a small lanceolate *bractea* near the summit. *Flower* nearly as large as the foregoing. *Calyx* smooth. *Radiant florets* scarlet, their terminal teeth very minute; those of the *disk* yellowish-red, about fifteen in number. *Seeds* of both all fertile. *Cavanilles*.

3. *M. vicifolia*. Vetch-leaved Mutisia. Cavan. Ic. v. 5. 62. t. 490. Willd. n. 3.—Leaves pinnate, with tendrils; leaflets lanceolate, smooth; the lower ones opposite. *Flower-stalks* terminal.—Found near Valparaíso, in Chili, flowering in May. We have a specimen from Cavanilles. This is very nearly akin to the last, but smaller in all its parts, and it appears to us that the *flowers* are almost always at the ends of short, lateral, more or less leafy, *branches*. The lower *leaflets* are not always opposite, though usually so. The *buds*, young *branches*, and sometimes the young *footstalks*, are rather woolly. The teeth at the ends of the radiant *florets* appear scarcely different from the last, of which species the present is perhaps a variety.

\*\* *Leaves simple.*

4. *M. ilicifolia*. Ilex-leaved Mutisia. Cavan. Ic. v. 5. 63. t. 493. Willd. n. 4.—Leaves roundish-heart-shaped, clasping the stem, bordered with spinous teeth. *Tendrils* simple.—Native of dry hilly places in Chili, flowering in January. The *stem* is shrubby, branched, climbing, striated, reddish, three feet or more in height. *Leaves* alternate, sessile, clasping the stem but not decurrent, roundish-heart-shaped, an inch wide, and somewhat more in length, coriaceous, bordered with strong, spreading, spinous teeth, their termination singularly abrupt, with two much longer divaricated teeth; their upper surface smooth; the under somewhat downy and glaucous, especially when young; their mid-rib terminates in a simple spiral tendril, thrice the length of the leaf. *Flowers* purple, on short, solitary, simple terminal stalks. *Calyx* smooth, hardly more than an inch in length; its scales yellowish, with a membranous edge. *Radiant florets* narrower than in any of the pinnated species.

5. *M. runcinata*. Lion-toothed Mutisia. Willd. n. 5. (*M. retrorsa*; Cavan. Ic. v. 5. 65. t. 498.)—Leaves oblong, runcinate, decurrent; woolly beneath. *Tendrils* cloven.—Gathered by L. Née, flowering in December, in dry barren situations, near Port Desire on the coast of Patagonia. *Stem* shrubby, zigzag, a foot and half long, branched, round, not winged, except as far as the bases of the leaves extend. *Leaves* lanceolate-oblong, about three inches in length, acute, strongly runcinate, somewhat revolute; smooth above; densely woolly beneath; decurrent and tapering at the base; tipped with a divided *tendril*, about their own length. *Flowers* terminal, yellow. *Calyx* about an inch long; its scales with acute recurved points. *Radiant florets* narrow, as long as the calyx.

We prefer Willdenow's name, though we should not, of our own accord, have changed the original one. His arrangement of the species is also preferable to that of Cavanilles.

6. *M. sinuata*. Blunt-toothed Mutisia. Cavan. Ic. 66. t. 449. Willd. n. 6.—Leaves linear-oblong, bluntly toothed, decurrent. *Tendrils* simple.—Gathered by the same botanist on the *Cordillera del Planchón*, Chili, in dry situations, flowering in January.—Similar in habit to the last, as well as in the colour of its *flowers*, and the pointed scales of its *calyx*; but the marginal *florets* appear by the plate to be broader and shorter. The *leaves* are bordered with much smaller, and far more numerous, blunt, prominent, not run-



cinatc, tccth, and arc ufually quite fmooth on both fides. Their *tendrils* moreover is undivided. *Stem* zigzag, fmooth.

7. *M. fubfpinofa*. Sharp-toothed Mutifia. Cavan. Ic. v. 5. 64. t. 495. Willd. n. 7.—Leaves linear, fharp-ly toothed; arrow-fhaped at the bafe. *Tendrils* fimple. *Stem* winged. Gathered by L. Née, near the town of Gaudamantanga, in Peru, flowering in July; and on the Cordillera del Planchón, in February. The *ftem* is about a yard high, fmooth, with three leafy fharp-ly toothed wings. *Leaves* feffile, clafping the *ftem* with their flightly arrow-fhaped bafe, which is connected with the wings of the *ftem*, but not properly decurrent, or tapering; they are linear or fomewhat lanceolate, with numerous fharp, rather fpinous, teeth, and a fimple *tendrils*. *Flowers* large and handsome, folitary, on a fhort terminal bractccated ftalk; their radius yellow, or fomctimes purple; difk yellow. Scales of the *calyx* with reflexed points. Cavanilles does not diftinctly fay that the leaves arc downy beneath, but his reference to the defcriptions preceding fcems to imply it.

8. *M. fagittata*. Arrow-leaved Entire Mutifia. Willd. n. 8. (*M. hafata*; Cavan. Ic. v. 5. 64. t. 494.)—Leaves lanceolate, entire; arrow-fhaped at the bafe. *Tendrils* fimple. *Stem* winged.—Native of the higheft mountains of Chili, flowering in January. Née alfo found it in Peru.—*Stem* two feet high, or more, downy, with four leafy downy wings, whole teeth arc fharp and hooked. *Leaves* four or five inches long, quite entire, woolly beneath, clafping the *ftem* with their broad arrow-fhaped bafe, gradually tapering from thence to a narrow point, ending in a long fimple *tendrils*. *Flower* terminal and folitary, as in all the fimple-leaved fpecies. *Calyx* an inch and half long, its fcales with broad reflexed points, hairy on the upper fide at their bafe. *Florets* of the radius often ten, purple, without any barren ftamens. Willdenow juftly thought himfelf obliged to change the name given by Cavanilles, as the leaves arc by no means hafate; *fquarrofa* would have been a ftill more expreffive appellation than that he has chofen.

9. *M. decurrens*. Decurrent Entire-leaved Mutifia. Cavan. Ic. v. 5. 65. t. 497. Willd. n. 9.—Leaves elliptic-lanceolate, decurrent, entire, fmooth. *Tendrils* cloven.—Native of the Cordillera del Planchón above mentioned, flowering in February.—*Stem* fmooth, round, zigzag, branched, two feet high. *Leaves* elliptic-oblong, entire, fmooth, coriaceous, decurrent to a confiderable extent at their bafe. *Tendrils* divided, and divaricated. *Flower* large, with about twelve radiant florets, which arc purple, as well as the difk. Scales of the *calyx* without any fpreading points.

10. *M. inflexa*. Narrow Curve-leaved Mutifia. Cavan. Ic. v. 5. 65. t. 496. Willd. n. 10.—Leaves linear, very narrow, deflexed at the bafe, incurved. *Tendrils* fimple. Bractccas awl-fhaped.—Native of various places in Chili. *Stem* branched, climbing to the height of 10 or 12 feet, ftriated, angular, fmooth. *Leaves* numerous, fcattered, feffile, linear, thick, very narrow, fmooth, three inches long; deflexed at the bafe, then afcending. *Tendrils* fimple. *Flower* large, with feveral awl-fhaped bractccas. *Calyx* an inch and half long, its fcales with reflexed tips. *Florets* of the radius eight, deep purple; difk yellow.—In fome of the mountain fpecimens, Cavanilles found twelve radiant florets.

11. *M. linearis*. Linear Clove-leaved Mutifia. (*M. linearifolia*; Cavan. Ic. v. 5. 66. t. 500. Willd. n. 11.)—*Stem* erect. *Leaves* linear, revolute, erect, fpinous-pointed, without tendrils.—Native of the mountains of Chili. This is fingular in its genus, for the want of tendrils. The *ftem* is fhubby, a foot high, flightly branched. *Leaves* numerous, crowded, erect, or clove-pressed, about an inch long, linear, revolute, tipped with a fmall fpinous point. *Flowers*

terminal, feffile, folitary, fmaller than any of the foregoing, their radius apparently purple in the dried fpecimens. *Calyx*-fcales obtufe, clofe.

MUTIUS, or MUCIUS, CAIUS, in *Biography*, furnamed *Scævola*, famous in the early hiftory of Rome, was born of an illuftrious family, at the time of the fiegce of the city by Porfenna, king of the Etrufcans, about the year before Chrift 507. During the blockade of the capital, when he found there was no hope of relief, he determined to render himfelf illuftrious by fome great act; he accordingly, with the permiffion of the fenators, croffed the Tiber, and entered the enemy's camp, with a concealed dagger under his garment; at length he obtained an admiffion into the royal tent, at the moment when the king was paying his foldiers, with his fecretary by his fide. Mutius miftaking the minifter for the monarch, laid him dead in a blow, and then in the confufion attempted to make his efcape. He was, however, feized and brought before Porfenna, in whofe prefence, he, without any hefitation, avowed his name and purpofe, and expreffed a readinefs to endure any fuffering that the king might choofe to inflict on him, adding that he was but one of a band of Roman youths prepared to make a fimilar attempt. Porfenna, enraged at the daring behaviour of the young man, called for fire, in order to extort from him whatever he might know of further meditated treachery. "Behold," faid the young patriot, "how little bodily pain is valued by thofe who purfue true glory," and infantly thruft his hand into the flame of an altar kindled for the purpofe of facrifice. The king, in admiration of the refolution with which he endured the torture, leaped from his feat, and ordering the youth to be taken from the altar, bid him depart without further moleftation. Mutius took his leave, warning the king that three hundred Roman young men had mutually fworn to attempt his affaffination, fhould he continue the fiegce. Porfenna infantly fent ambaffadors to Rome to offer terms of peace. Mutius, for his act, was named *Scævola*, left-handed, on account of the voluntary injury done to his right hand, which appellation defcended to his pofterity. "Although," fays a biographer, "the action of *Scævola* cannot be juftified by the rules of fair and honourable warfare, yet it has been extolled by poets and orators among thofe patriotic deeds which fo much diftinguifhed the infant ftate of the Roman republic. Livy fcems to excufe it, in the words which he puts into the mouth of the hero, 'Hostis hoftem occidere volui; I, a foe, refolved to deftroy the enemy of my country. Balthafar Gerard, however, who killed William, prince of Orange, and Poltrot de la Mere, who killed the duke of Guife, were both confidered as murderers.'

MUTIUS-SCÆVOLA, QUINTUS, called the "Augur," a Roman of great authority as a lawyer, married the daughter of Lælius, and was the father-in-law of Lucius Craffus. He was prætor in Afia, and conful in the year B.C. 117, with L. C. Metellus, with whom he had the honour of a triumph. On various occafions he performed great fervices to the ftate, and though, at that period, far advanced in years, he took part with Marius againft Sylla. Cicero was inftructed by this venerable perfon in the principles of wifdom, and in gratitude for his attentions to him, he made his preceptor one of the interlocutors in his firft dialogue, "De Oratore."

MUTIUS-SCÆVOLA, QUINTUS, an eminent Roman, who was tribune of the people in the year B.C. 106, and conful in 95 B.C. with Caius Licinius Craffus. He was prætor in Afia, over which he ruled with fo much prudence and juftice, that he was propofed as a model for all future governors. His character was extremely high for legal knowledge,



ledge, with which he unquestionably possessed a most masculine eloquence. Crassus, in Cicero's dialogue "De Oratore," styles him the best orator among lawyers, and the best lawyer among the orators. Quintilian gives the same character of him. He was killed in the civil wars between the Marian and Sylla factions, in the year B.C. 82, in the temple of Vesta, and his body was thrown into the Tiber. He is thought to have been the first person who reduced the civil law to a methodical system. On this subject he wrote eighteen books, which are often referred to by the ancient lawyers.

**MUTIUSCHICA**, in *Geography*, a bay or gulf in the Frozen sea, on the N.W. coast of Nova Zembla. N. lat.  $75^{\circ} 50'$ . E. long.  $57^{\circ} 14'$ .

**MUTNANG**, a town of Bengal; 20 miles W. of Toree.

**MUTOVA**, one of the Kurile islands, 45 versts from Rock Koke; about 30 versts long, and of the same breadth. On the S. side stands a very lofty mountain, from whose summit a thick black smoke is continually rising, and which occasionally casts up red-hot stones, spreading danger and desolation round it. To the N., vallies rich in herbs and habitable plains extend, where various kinds of edible roots and wild fruits grow. The only land animals in this island are foxes. Persons subject to the tribute are here numbered at 63.

**MUTQUIN**, a town of South America, in the province of Tucuman; 25 miles N.E. of Fernando.

**MUTSCHCOUR**, a town of Persia, in the province of Irak; 35 miles N. of Ispahan.

**MUTSCHEN**, or **MUTZSCHEN**, a town of Saxony, in the circle of Leipzig, in the neighbourhood of which is a species of crystal, which bears the name of Mutschien diamond; 22 miles W. of Meissen. N. lat.  $51^{\circ} 41'$ . E. long.  $12^{\circ} 48'$ .

**MUTSCHNITZ**, a town of Germany, in the principality of Coburg; nine miles N.E. of Coburg.

**MUTT**, a town of Hindoostan, in Bahar; 37 miles S.S.W. of Arrah.

**MUTTABARROW**, a town of Hindoostan, in Guzerat, at the mouth of the Surfooty; 25 miles N.W. of Puttan-Sumnaut.

**MUTTAMUSKEET**, a lake of North Carolina; 20 miles long and five wide, three miles N. of Pamlico Sound.

**MUTTEAH**, a town of Hindoostan, in Bahar; 10 miles N.N.W. of Bettiah. N. lat.  $26^{\circ} 55'$ . E. long.  $84^{\circ} 35'$ .

**MUTTEARY**, a town of Hindoostan, in Bahar; 22 miles S.E. of Bettiah. N. lat.  $26^{\circ} 38'$ . E. long.  $85^{\circ} 10'$ . —Also, a fort of Hindoostan, in Bahar; 36 miles N.N.W. of Chuprah. N. lat.  $26^{\circ} 17'$ . E. long.  $84^{\circ} 28'$ .

**MUTTEN**, a town of Switzerland, in the canton of Schwitz, situated in a valley called Muttenthal, watered by a small river called Muttén, which runs into the lake of the four cantons, six miles E. of Schwitz.

**MUTTEN Bay**, a bay on the N. side of the river St. Lawrence, on the coast of Canada. N. lat.  $48^{\circ} 25'$ . W. long.  $69^{\circ}$ .

**MUTTERSTADT**, a town of France, in the department of Mont-Tonnerre, and chief place of a canton, in the district of Spire. The place contains 1415, and the canton 9481 inhabitants, in 17 communes.

**MUTTRA**, a town of Hindoostan, in the subah of Agra, on the Jumna; 36 miles from Agra.

**MUTTY**, a town of Hindoostan, in Guzerat; 60 miles W. of Noanagur.

**MUTTYARA**, a town of Bengal; 14 miles E. of Kishenagur.

**MUTU**, in *Ornithology*, a name by which some call a large Brazilian bird, of the gallinaceous kind, more usually called *mitu*. See *CRAX Alester*.

**MUTUAL**, a relative term, denoting something that is reciprocal between two or more persons.

Thus we say, mutual assistance, mutual aversion, &c.—There are mutual or reciprocal duties, offices, &c. between superiors and inferiors; as the king and his subjects, the master and his servants, &c.

Vaugelas makes a distinction between mutual and reciprocal; mutual, according to him, is understood of what is between two only; and reciprocal of what is between more than two; but this distinction is little regarded in common use.

**MUTUAL Testament** is that made by two persons who leave their effects reciprocally to the survivor.

**MUTUALES**. See **METUALES**.

**MUTUAPOLLAM**, or **MOOTEAPOLLAM**, in *Geography*, a town of Hindoostan, in the Carnatic. Near this town Hyder Ally, on occasion of a battle fought with sir Eyre Coote, in July 1781, was defeated with the loss of 4000 men; five miles S. of Cuddalore.

**MUTULE**, in *Architecture*, a part of the Doric cornice, appearing to support the corona and the superior members, formed by three vertical parallelograms at right angles, and an inclined plane which descends towards the front of the cornice, until it meets the rectangular vertical plane, the inclined plane being the soffit, and the two vertical parallel planes being at right angles to the surface of the frieze, and the vertical plane on the front parallel thereto.

Mutules had their origin from the ends of rafters in the original wooden structures, and are, therefore, properly represented with a declination towards the front of the corona; though represented by an architect of the last century with a level soffit.

In Grecian architecture, a triglyph is placed at each angle of the building, and, consequently, a mutule over each triglyph at the same place, and a triglyph and a mutule are placed over each intermediate column; also over each intercolumn there is only one triglyph, except in the Doric portico, which has two in the middle intercolumniations, in order to allow greater room for passage. The mutules are the same breadth as the triglyphs.

Of all the buildings now remaining of Roman antiquity, the theatre of Marcellus is the only one in which any specimen of the Doric order is to be found; but this example is so void of original character as to have a denticulated cornice, which is peculiar to the Ionic or Corinthian. The mutules are only carved on the soffit, and not seen in front under the corona.

In the Grecian Doric three rows of drops, parallel to the front of the corona, are hung from each soffit of a mutule; the number in each row being six, agreeing with those in the architrave under the triglyphs.

**MUTUUM**, in the *Civil Law*, denotes a loan simply so called; or a contract introduced by the law of nations, whereby a thing consisting in weight, as suppose bullion; in number, as money; or in measure, as corn, timber, wine, &c. is given to another, upon condition that he shall return another thing of the same quantity, nature, and value, on demand.

This, therefore, is a contract without reward; so that where use or interest arises, there must be some particular article in the contract whereon it is founded.

**MUTWAL**, in *Geography*, a river of Ceylon, called also Calana



Calana Ganga, one of the branches by which the Mulwaddy falls into the sea, about three miles from the fort of Columbo, after having nearly surrounded a large tract of level country in that neighbourhood, of which it forms a very beautiful peninsula. The country along the banks of the Mutwal for many miles is extremely picturesque and delightful.

MUTYBARA, a town of Bengal; 33 miles N.N.E. of Purneah.

MUTZA, or MUZZA, a town of Italy, in the department of the Adda, on a river of the same name; three miles S.E. of Lodi.

MUXACAR. See MUJAXAR.

MUXILLONES, a small island in the South Pacific ocean, near the coast of Chili; S. lat.  $29^{\circ} 30'$ .

MUXOODPORUM, a town of Bengal; 14 miles S.E. of Mahmudpour.

MUXOODPOUR, a town of Hindoostan, in Bahar; 30 miles S.W. of Bahar.

MUYDEN, a town of Holland, seated on the river Vecht, near the Zuyder see; which has a sluice by which the adjacent country may be inundated. Salt is the chief manufacture of the place; 6 miles E. of Amsterdam. N. lat.  $52^{\circ} 23'$ . E. long.  $4^{\circ} 55'$ .

MUYS, WYER-WILLIAM, in *Biography*, a physician of the mathematical sect, was born at Steenwyk, in Overysse, in January 1682, where his father practised the same profession. His early education was obtained in his native town; and he then passed three years at the college of Kempen, for the study of the classics, and afterwards was instructed in the first principles of medicine, algebra, and geometry at Vollenhove. At the age of sixteen he commenced his studies at Leyden, and went from thence to Utrecht, where he received the degree of doctor in 1701. He settled at first in his native town, and afterwards removed to Arnheim, where he practised with reputation and success. An offer of a professorship at Groningen was at first rendered void by the disputes of a cabal; but his disappointment was repaid by an election to the mathematical chair in the university of Franeker, in 1709, and to the medical chair in the same school in 1712, which he exchanged for that of chemistry in 1720. He was afterwards chosen professor of botany, which comprehended the inspection of the botanic garden. The house of Orange subsequently retained him as consulting physician, with a considerable salary, which he received to the end of his life. He was cut off by a lingering disease, in April 1744, at the age of 62. He had been five times rector of the university of Franeker, and was a member of the Royal Academy of Sciences of Berlin. His writings were partly medical and partly philosophical, and bore the following titles: "Oratio de Usu Mathematicos in perficiendo ingenio et iudicio," Franeker, 1711. "Elementa Physices methodo mathematico demonstrata, quibus accedunt Dissertationes duæ: prior, de causa soliditatis corporum: posterior, de causa resistentiæ fluidorum," Amst. 1711. "Oratio inauguralis de Theoriâ usu, atque rectâ illam excolendi ratione," Franc. 1714. "Dissertatio et Observationes de Salis Ammoniaci præclaro ad febres intermittentes usu," ibid. 1716. This is said to merit attention in a practical view. "Disputationes duæ, de Materia Luminis, seu Ignis, Caloris, et Lucis naturâ," ibid. 1721. "Investigatio Fabricæ quæ in partibus musculos componentibus existat," Leyden, 1738, 1741, and 1751, in quarto. This is a laboured and copious compilation of all that had been previously discovered respecting the structure of the muscular flesh and its fibres, the divisions and subdivisions of which he had

traced with extreme minuteness, and illustrated by three good microscopical plates, drawn by himself. After his death a work of his was published in French, entitled, "Dissertation sur la Perfection du Monde corporel et intelligent, ou l'on demontre en detail le merveilleux mécanisme par lequel Dieu a voulu que les espèces des Hommes, des Animaux, et des Plantes se perpétuaient pendant un tems déterminé, &c." Leyden 1745 and 1750, in 12mo. And also "Opuscula posthuma, seu Sermones Academici de selectis Materiis, &c." 1749, edited by his son.

John Muys, the father of the preceding, who removed to Leyden, and practised physic there, was author of a work entitled "Praxis Medico-chirurgica rationalis," which was published in twelve decades, between the years 1684 and 1690; and "Podalirius redivivus," a supplement to the former work, in 1686. Eloy Dict. Hist. de la Med.

MUZA, in *Ancient Geography*, a port of Arabia Felix, in the country of the Elisari, placed by Ptolemy between Sacacia and the port of Sossippus. Arrian places it 12,000 stadia S. of Berenice.

MUZANA, a town of Asia, situated N. of Melitene, on the bank of the river Melas and near the mountains.

MUZILLAC, in *Geography*, a town of France, in the department of Morbihan, and chief place of a canton, in the district of Vannes; 12 miles S.E. of it. The place contains 3615, and the canton 14,100 inhabitants, on a territory of  $187\frac{1}{2}$  kilometres, in 6 communes.

MUZIMBAS. See ZIMBAS.

MUZIO, GIROLAMO, in *Biography*, an Italian writer, was born at Padua in 1496. He was educated at his native place till he was eighteen years of age, when, owing to the death of his father, he was obliged to seek a maintenance in the courts of different princes. For a number of years he led a wandering life, and in one of his letters, he complains that he has been obliged to gain his bread by serving sometimes in the armies; sometimes in the courts of popes, emperors, kings, and other princes; sometimes in Italy; sometimes in France, and sometimes in Germany. The nature of his services has never been clearly ascertained; he is said to have been a doctor of laws, and an eminent jurist, but none of his writings are upon legal topics. By pope Leo X. he was honoured with the title of Cavalier. He was in the service of the marquis del Vasto for several years, who sent him to reside with the duke of Savoy. After the death of the marquis, he passed into the service of Don Ferdinand Gonzago, whose affairs he managed at several Italian courts. The duke d'Urbino next appointed him governor to his son, afterwards duke Francis II. About the year 1569 he was at Rome, where pope Pius V. retained him with a handsome pension, to be employed solely in writing, for he had by this time distinguished himself as a vigorous adversary of the reformers. The death of that pope deprived him of his pension, and he was reduced to circumstances of great distress, which, in truth, was the chief complaint of the greater part of his life. After this he was admitted into the service of cardinal Ferdinand de Medici. He died in 1576, at the age of eighty-six. He left behind him very many works, of which we may notice his "De Arte Poetica," in three books, composed in blank verse; this was very much valued at the time in which it appeared, as well for the elegance of its language, as for the excellence of its precepts. In 1566, he entertained an idea of composing an epic poem on the subject of the recovery of Jerusalem by the knights under Godfrey of Bouillon. As a prose writer he left "Letters," "Histories," "Moral Treatises," and several tracts against those whom he chose to style innovators in religion.

MUZIRIS,



**MUZIRIS**, in *Ancient Geography*, a sea-port town of India, on the western or Malabar coast, 40 days' sail from Ocelis (Gella) in the Red sea, just within the strait of Babel-Mandeb. This was the first port of merchandise, by which the ancients carried on their commerce between Berenice down the Red sea with India. From Berenice to Ocelis it was reckoned 30 days' navigation, and from thence to Muziris 40 days' sail; and as they left Berenice about Midsummer they might arrive in India in the latter end of August, when the violence of the S.W. monsoon was abated and the coasting navigation safe and easy. Muziris is said by Pliny to have been an inconvenient place of merchandise, because the shallowness of the port, or river's mouth, made it necessary to discharge or take in the cargo in small boats, at a distance from the emporium; and besides, there was danger from the pirates at Nitria. It is not easy to ascertain the precise site of the ancient Muziris; but major Rennell, from an attention to the several circumstances mentioned by Pliny and Ptolemy, concludes that Muziris was the place now denominated Meerzaw or Merjee; he observes that they bear some affinity in the sound; and their situation is similar, both being seated on a river and at some distance from the sea. See **MEERJEE**.

**MUZOS**, in *Geography*, the name of a people in New Granada, who inhabit a province of the same name, celebrated for rich mines of the most precious emeralds in the world. They are neighbours and enemies of the Moscos or Muefcas. Their country is mountainous, hot, and moist; and from the summits may be discerned the polar stars, both of the north and south; while towards the end of August and the middle of March, the sun throws no shade at noonday. This savage tribe is distinguished by many singularities. They have among them a fabulous tradition, that in ancient times there was on the other side of the great river Magdalena, a kind of shadow of a man called Ari, who, having amused himself with making in wood faces of many men and women, threw them into the river, and when they came out alive, he married them and taught them to cultivate the earth; after which they dispersed and became the parents of all the Indians, who are inferior to the Europeans, because their heads were made of wood. They had no deities, nor did they adore the sun and moon, as other people of Bogota did; those splendid bodies having been created, according to their creed, after the wooden men, and merely to give them light. When girls arrived at the age of sixteen, they were married by their parents, without any previous notice. The husband then went to care for his wife, when she received him with blows of a cudgel; but in a short time became appeased, and prepared his victuals, though during the honeymoon they were obliged to sleep together without consummating the marriage. In case of adultery, the husband broke all the vessels of wood or clay that were in the house, and retired to the mountains, till the wife should have replaced them. The dead were dried before a slow fire, and not interred till the end of a year; the widow being obliged to cultivate the ground for her sustenance, till her relations took her home after the interment. Estalla cited by Pinkerton in his *Geog.* vol. ii.

**MUZZLE** of a Gun or Mortar, the extremity of the cylinder, where the powder and ball are put in. The metal which surrounds the extremity of the cylinder is likewise called the muzzle. See **CANNON**.

**MUZZLE**, a term applied to the nose of a horse or other animal. It also signifies a kind of halter put upon the nose of a horse or mule, to prevent eating or biting improperly.

**MUZZLE** of a Plough, in *Agriculture*, a term sometimes

applied to the copse or part to which the draught is attached in these tools.

**MY**.—*Per My & per Tout*. See **PER my**.

**MYA**, in *Conchology*, is a genus of the Vermes testacea class and order, of which the generic character is given under the word in the article **CONCHOLOGY**. The animals included in this genus perforate into sand and clay at the bottom of the sea, burying themselves and their shells wholly or in part. There are twenty-six species enumerated in Gmelin's last edition of Linnæus's *System of Nature*.

#### Species.

\* **TRUNCATA**. Shell ovate, truncate, and gaping greatly behind; tooth projecting forwards and very obtuse. It inhabits the European seas; is two inches and a half long; the shell is of a dirty-white covered with a yellowish-brown skin; the inhabitant is frequently eaten, and is the principal food of sea-birds. It is described and figured, as are several of the following species, in Pennant's *Brit. Zool.* vol. iv.

\* **DECLIVIS**. The shell of this species is brittle, semitransparent; sloping downwards near the open end; the hinge is slightly prominent. Found about the Hebrides; the fish is in general estimation among the inhabitants of those islands.

\* **ARENARIA**. Shell ovate, rounded behind; tooth projecting forwards and furnished with a lateral smaller one. This species is found in the European seas, under the sand; is two inches and a half long, and of a yellowish reddish-brown.

**PICTORUM**; Painter's Mya. Shell ovate; with a single, longitudinal, crenulate tooth in one hinge, and two in the other. There are several varieties of this species, described by different naturalists; some of them are found in the fresh waters of this country, and other parts of Europe, some in Barbary, and some in Tranquebar. The shell, which is nearly four inches long and half as broad, is commonly used to put water colours in, whence we have its name; it is covered with a brownish or blackish coat, under which it is yellowish or green; it is very thin and brittle, and does not gape at either end.

**MARGARITIFERA**; Pearly Mya. Shell ovate, a little contracted in the middle of the thinner margin; primary tooth of the hinge conic; protuberant parts near the hinge decorticated. It is found in many parts of the arctic circle, and generally in the rivers and about the cataracts; it is five inches broad and half as long; the shell is thick, coarse, opaque, black on the outside, and often corroded by worms; the hinge is without lateral teeth, the primary tooth being received into a broad cleft tooth of the opposite hinge. This shell is celebrated on account of its producing large quantities of mother-of-pearl and pearl; the latter being a disease of the fish analogous to that occasioned by a stone in the human body. The river Conway in Wales was formerly famous for producing pearls of great size and value.

**PERNA**. Shell oblong, dilated, the narrower base compressed. It inhabits the Magellanic straits and shores of Barbary; it is said to resemble a ham or leg of mutton; it is smooth, blue and white, and open at one end.

**VULSELLA**. Shell tongue-shaped; the hinge is terminal, depressed, and semiorbicular. The shell of this species varies in form according to its age.

**ARCTICA**. Shell striate; the valves with two subspinous ridges; hinge without teeth. It is found in the North-seas among algæ, is the size of a bean, and of a pale yellow, and milk-white within.

**EDENTULA**.



**EDENTULA.** Shell oval, equivalve, wide, gaping, and striate; hinge without teeth. It inhabits the sandy shores of the Caspian sea, and is about an inch long; the shell is thin, white, with about thirty-three striae in each valve.

**RADIATA.** Shell equivalve, pellucid, very finely striate transversely, yellowish-green with livid rays; valves very broad on one side and very narrow on the other. There is a variety which is brownish, with blue radiate lines. It inhabits the rivers of Malabar.

**OBLONGA.** Ovate-oblong; one valve with a broad strong tooth let into a hollow of the other valve, and a lesser tooth inserted between two small ones of the opposite valve.

**ANATINA.** Shell globular, snowy, pellucid; primary tooth of the hinge prominent and rounded. It inhabits Guinea, and resembles the *SOLEN anatinus*; which see.

**NICOBARICA.** Shell equivalve, snowy, ovate-oblong, with decussate striae; tooth of the hinge single, broad, perpendicular, and spoon-shaped. It inhabits, as its name imports, the Nicobar islands.

**AUSTRALIS.** Shell ovate-compressed, closed; hinge with two lateral teeth. Found in New Zealand.

**GADITANA.** Shell rounded, flattish, transversely striate. It inhabits the shores of Cadiz.

**CORRUGATA.** Shell rhombic, green; the protuberant parts wrinkled. It is found in the rivers of Coromandel, and is nearly an inch long.

**RUGOSA.** Shell is oval, wrinkled, outwardly it is greenish, and within pearly; primary tooth of the hinge crenulate, with a longitudinal lateral one, double in the other valve. It inhabits the rivers on the coast of Coromandel.

**NODOSA.** The shell of this species is oval, thin, greenish; the protuberant parts knotty.

**NORWEGICA.** Shell oval, longitudinally and thickly striate; one end rounded, the other truncate; the protuberant parts are decorticated.

**SPURIA.** Shell rhombic, green; the protuberant part is glabrous. It is found in the rivers of Tranquebar, and resembles the *M. corrugata* in every thing but its size, being twice as large as that.

**GLYCERNIS.** Shell gaping at both ends, very thick, lamellous, oblong-oval, with transverse wrinkled striae; primary tooth in the hinge very thick. Inhabits the European oceans, particularly the Spanish and Mediterranean seas. It is five inches long and ten broad, and resembles a *Solen*.

**SYRMATOPHORA.** Shell ovate, depressed; margin of the hinge with a subulate projection near the primary tooth; that of the other valve dilated. It is found in the rivers of Guinea.

**NITIDA.** Shell oval, white, smooth; with an obtuse tooth in each hinge. It inhabits Norway.

**MEMBRANACEA.** Shell ovate, membranaceous, white, with a protracted reflected margin at the proboscis.

**BYSSIFERA.** The shell of this species is coarse and thick; oblong, striate, convex, hinge without a tooth. It is found in the fissures of rocks on the Greenland coast, and is generally found affixed by a byssus or mass of filaments.

\* **DUBIA.** In this species the shell is found with an oval and large hiatus opposite the hinge, and the rudiment of a tooth within one valve. It is found near Weymouth. The shell is brown and brittle; the length of a horse-bean, and shaped like a pistachia nut.

From certain observations on the growth of these shells, and the number of their annual laminae or scales, it has been imagined that this fish will attain to a great age, and that fifty or sixty years is but a very moderate computation.

Linnæus has shewn that the mya will bear removing, and that, by a particular process, it may be put into a state of producing pearls at pleasure in the reservoirs to which it is transferred, the old pearls being removed to make way for the formation of new ones.

**MYA**, in *Geography*, an island in the East Indian sea, about ten miles long and four broad. N. lat.  $1^{\circ} 14'$ . E. long.  $127^{\circ} 27'$ .

**MYAGRUM**, in *Botany*, a word adopted from Dioscorides, whose *μυαγρος* nevertheless is very obscure, nor does that author say any thing which may lead to the meaning of the name; except indeed that he describes the plant as making a rude sort of candles. "The fat feeds, roasted and bruised, are smeared over the twigs, which then," says he, "serve in the place of lamps." Such artificial lights are well known to attract flies to their destruction; and therefore perhaps Tournefort's derivation of the word, from *μυα*, a fly, and *αγρεω*, to catch, or ensnare, may be true, rather than the received one, from *μυς*, a mouse. (See *MUSCIPULA*.) Tournefort however justly observes that this explanation is not suitable to our *Myagrum*.—Linn. Gen. 331. Schreb. 434. Willd. Sp. Pl. v. 3. 406. Mart. Mill. Dict. v. 3. Sm. Prodr. Fl. Græc. Sibth. v. 2. 1. Juss. 241; sect. 1. Tourn. t. 99. Lamarck Illustr. t. 553. f. 1. Gærtn. t. 141. Clafs and order, *Tetradynamia Siliculosa*. Nat. Ord. *Siliquosæ*, Linn. *Cruciferae*, Juss.

Gen. Ch. *Cal.* Perianth of four ovate-oblong, concave, gaping, coloured, deciduous leaves. *Cor.* cruciform, of four flat, roundish, obtuse petals, with narrow claws. *Stam.* Filaments six, as long as the calyx, the four opposite ones rather longer; anthers simple. *Pist.* Germen superior, ovate; style thread-shaped, the length of the calyx; stigma obtuse. *Peric.* Pouch inversely heart-shaped, slightly compressed, terminated by the rigid conical style, coriaceous, without valves, having one fertile cell, and two empty inflated ones above. *Seed* solitary, elliptic-oblong, pendulous.

Ess. Ch. Pouch without valves, crowned with the conical style, single-seeded, with two empty cells above.

This genus is very miscellaneous in Linnæus as well as Willdenow and others. Twelve species are found in the writer last named, of which the 1st, *M. perenne*, the 2d, *orientale*, and the 12th, *egyptium*, properly belong to *Bunias*; the 4th, *hispanicum*, is *Cordylocarpus pubescens*, Prodr. Fl. Græc. v. 2. 33; the 6th, *chlorosolum* of Willdenow, seems, in the opinion of the author himself, to be of a distinct genus, and certainly the description he gives of the fruit is not that of a true *Myagrum*; the 7th, *sativum*, was long ago referred to *Alyssum* by Scopoli, as well as in the *Flora Britannica*, and the 8th, *dentatum*, is of the same genus, if not the same species; the 10th, *paniculatum*, constitutes the genus *Rapistrum*, adopted from Tournefort in Gærtner, and Prodr. Fl. Græc. v. 2. 1; the 9th and 11th, having a pouch of two cells, with several seeds in each, can have nothing to do with the genus in question. The only remaining species therefore is

1. *M. perfoliatum*. Linn. Sp. Pl. 893. Willd. n. 5. (*M. monospermon latifolium*; Bauh. Pin. 109. Prodr. 52. t. 51. *M. hortense monospermon*; Besl. Eyf. ætiov. ord. 10. t. 8. f. 1.)—Native of corn-fields in the south of Europe. The root is annual, tapering. *Stem* one and a half or two feet high, alternately branched, smooth, round, leafy. *Leaves* alternate, oblong, obtuse, slightly and irregularly toothed, glaucous, smooth, from four to six inches long, clasping the stem with their heart-shaped base; their midrib pale. *Flowers* numerous, small, pale yellow, corymbose. *Fruit* very copious, in long lax clusters, smooth. It is difficult

cult



cult to account for the two empty cells, which form inflated round protuberances at the top of the pouch, and have no rudiments of seeds. As the pouch falls off entire, perhaps they serve to keep it upright in its descent, that the sharp base may the better find its way into the ground.

MYAPOUR, in *Geography*, a town of Bengal; 65 miles N.W. of Ramgur.

MYAS, a town of Africa, in the country of Sennaar; 50 miles S.S.E. of Sennaar.

MYCALE MONS, in *Ancient Geography*, a mountain of Ionia, on the sea-coast, at a small distance N. of the mouth of the Meander. It formed a promontory over-against the isle of Samos. It was the highest mountain on the coast; covered with wood and abounding with fallow deer. Here was also a town of the same name, and near it was a temple appropriated, as it has been said, to the furies.

MYCALESSUS, a town in the eastern part of Bœotia, between Schemis to the west and Aulis to the east. In the time of Pausanias the ruins of this town remained; but on the coast of the sea was a temple of Ceres Mycalessia.

MYCE, from *μυς*, to *swink*. The medical and surgical meanings of this word are rather indeterminate, or at least exceedingly different. Thus, a *swinking*, a *fungus*, and an *obliteration*, are given among its significations.

MYCENA, in *Botany*, from *μύκη*, a *fungus*, the fourth section of the genus *Agaricus*, as it stands in Persoon, consisting of thirty-nine species, which are of a small size and delicate habit. Their cap is, for the most part, membranous, with pellucid radiating streaks, convex and permanent. Gills of an uniform colour, shrivelling. Stalk usually tubular, elongated and naked.

Examples are *Agaricus alliaceus*, Jacq. Austr. t. 82; and *A. porreus*, which is *alliaceus* of Sowerby, t. 81; also *A. tener*, Sowerb. t. 33.

MYCENÆ, in *Ancient Geography*, a town of Greece, in the ancient kingdom of Argos, or Argolis, which, in process of time, became the seat of the kingdom, and is celebrated by Homer for its riches, as its rival Argos was for its horses. As to its situation, some difference of opinion has subsisted among ancient geographers. Strabo placed this town towards the S.W. of Argos. Pausanias mentions some circumstances that serve to ascertain its position more precisely. Perseus came from Larissa in Thessaly to Argos, and he is said to have received an extraordinary admonition from the gods to build a city on a particular spot, with which he speedily complied. M. d'Anville suggests, that this spot lay to the N.E. of Argos, because it was situated on the route of Perseus, and that position is confirmed by the description of Pausanias. Some historians have ascribed the separation of the kingdom of Mycenæ from that of Argos to Acrisius, who was its first king, and who began his reign in the year 1344 B.C., and who reigned 31 years; whilst others say, that his son Perseus, who succeeded him in the year 1313 B.C., and who reigned 32 years, built the city of Mycenæ, and founded the kingdom. The fifth king of this separate state was Agamemnon, who began his reign in the year 1201 B.C., and reigned 18 years. The kingdom of Argos had been translated to this little state, situated on the river Inachus, which parted it from Arcadia on the west, and which had the gulf of Lepanto on the south, as some say, by Acrisius, but according to others by Perseus; so that this metropolis became in a short time more populous and opulent than the other; but it fell into such decay presently after the dissolution of the Mycenian, or, as it is commonly called, the kingdom of Agamemnon, that, as Strabo informs us, there were scarcely any foot-steps left of it in his time, though some Roman historians seem to hint

as if some part of that once famed city were still standing when the Romans conquered Macedonia. In the reign of Atreus, which commenced 1266 B.C., the Heraclidæ, being the sons and descendants of Hercules of the line of Perseus, claimed the kingdom of Mycenæ, from which they had been driven by Eurystheus. Agamemnon, who succeeded his father Atreus 1201 B.C., was reckoned at that time the wealthiest and most powerful potentate in all Greece. This king, after the destruction of Troy, having encountered several disasters, arrived at last at Mycenæ, where he was murdered by his cousin Ægisthus and his wife Clytemnestra. Ægisthus seized upon the kingdom 1183 B.C., and, after a reign of seven years, was murdered by Orestes, Agamemnon's son, and succeeded by him 1176 B.C. Orestes was succeeded by Ægyptus, or rather Æpytus, who gained the kingdom in 1106 B.C., and by his liberality engaged the affections both of the nobles and the people; but this liberality proved ultimately fatal to the regal dignity: the subjects grew daily more and more encroaching, and the kings more tenacious of their prerogative, till the contest ended in the extinction of monarchy, and a total change of government. Among other ancient remains, besides those which were destroyed before the time of Pausanias, we may enumerate the tomb of Electra, those of Clytemnestra and Ægisthus, which were without the walls, about fifteen stadia from Mycenæ, and at the foot of mount Eubœa; on the left was the temple of Juno, the road to which was watered by the streams that flowed from the fountain Eleuteria, which served the priestesses for their purifications, and for the secret functions of their ministry. A large space before the temple was called "Prosymne," and over-against it was a mountain called Acræa. The Asterion flowed at its base, and precipitated itself into a gulf. The front of the gate of the temple was decorated with many female statues of the priestesses that had been employed in the service of Juno, and others of heroes, particularly of Orestes. At the left of the vestibule of the temple were statues of the graces in ancient taste: the statue of Juno, of gold and ivory, executed by Polycletes, was of an extraordinary size, seated on a throne at the entrance of the temple. On the head of the goddess was a crown, on which were exhibited the Hours and the Graces. The statue of Hebé, also of gold and ivory, was near that of Juno. Within the temple was a silver altar, on which were engraved, in bas-relief, the nuptials of Hercules and Hebé. Here were also a golden peacock, encircled with precious stones, which had been presented by the emperor Adrian, and also a crown of gold with a purple veil, given by Nero. For further particulars, see Pausanias Corinth. l. ii. c. 17. The tomb, treasury, or temple of Agamemnon, which still exists, probably in the state in which it was left by the Argians, after the destruction of the city in the 78th olympiad, 460 years B.C. deserves particular notice, as this edifice is perhaps the most singular in Greece, and on account of the state of preservation in which it still exists, being entire as to the building, though deplored of its internal decorations: Pausanias says, that envy on the part of the Argians, because the inhabitants of Mycenæ shared with the Lacedæmonians the glory of Thermopylæ, was the occasion of its destruction. The nature and destination of the above-mentioned edifice is doubtful. Pausanias says, that the tomb of Agamemnon, erected about 1200 years B.C., was among the ruins of Mycenæ; whereas this is at some distance from the walls. He also describes the subterraneous treasury of Atreus and his descendants as being in the same place; and hence it has been inferred, that this building, constructed of the same materials as the walls, and coeval with the time of their



erection, was the treasury of Atreus. It is a cone of fifty feet in diameter, and as many in height. It is composed of enormous masses of a very hard breccia, or sort of pudding-stone; the black in particular, over the door-way (which diminishes very much in breadth at the top, after the Egyptian manner), is no less than thirty feet in length, fifteen in breadth, and five in thickness. This extraordinary edifice has obviously been raised by the projection of one stone over another, and they nearly meet at the top; the curved form and smoothness being previously given to each. The central stone at the top has been removed, along with two or three others; and yet the building remains as durable as ever, and will probably last till the end of time; which would scarcely appear likely, if this had been the key-stone and support of the whole edifice. The treasury of Minyas at Orchomenus, in Bœotia, said to have been built about 1350 years B. C., is supposed to have been constructed in a similar manner, and the central stone which covered it, is thought to have had nothing more to do with the rest, than as it might regulate the symmetrical form of each. Hence it has been inferred, that neither the one nor the other of these edifices can warrant the conclusion, deduced from them by M. Dutens, in his "*Recherches sur le tems le plus reculé de l'Usage des Voutes, chez les Anciens*," that we cannot desire stronger proofs of the existence of arches from the most remote ages. *Edinburgh Review*, N. 14.

MYCETITES, in *Natural History*, the name of a species of sea-coral, which is usually of a conic shape and striated texture; always small, and usually found adhering to sea-shells, or large corals. See *FUNGITÆ*.

MYCETITES *Discoides*, a name given by Dr. Woodward to those kinds of fossil coralloid bodies which the generality of writers had called, after Dr. Plott, *porpita*. These are usually small, and of a roundish, but flattened figure; they are hollowed on one side with a sort of umbilicus, and striated on the other; they are found on the ploughed lands in Oxfordshire, and some other of our midland counties, and in other places, buried in the solid strata of stone; they are sometimes yellowish, sometimes brownish, and are from the breadth of an inch to a fourth part or less of that size; when broken, they are usually found to consist of a kind of spar, not unlike that of which the shelly coats of the echinæ, or the lapides indicæ, and other spines of echini, consist in their fossil state; and in some of them the ridges and striæ are thick set with little knobs and tubercles. The basis in some of these is flat, as it is in others rising in form of a circular elevation from the umbilicus, and others have a circular cavity in the same place.

MYCONI, in *Geography*, one of the Cyclades in the Grecian Archipelago, about 21 miles in circumference, situated between Icaria or Nicaria and Delos. This is the ancient *Myconus*, which, by fabulous relation, was the tomb of the Centaurs that were killed by Hercules. Some ancient writers have called the inhabitants of Myconus bald heads, asserting that this defect was natural, and that it was a kind of endemic disease, with which almost all of them came into the world; but no appearances of it now remain. They were also reckoned great parasites; and men, who presented themselves at feasts without being invited, were proverbially called "guests of Myconi." In a harbour known by the name of "Tourlon," is an anchorage frequented by ships sailing through the Archipelago, in order to repair to Smyrna and the north of Turkey. They are here safe from the winds that proceed from the N., N.E., S., and S.E.; but the others blow right in here, and raise a heavy sea. When navigators seek a shelter against these winds, they seek it off the small town or village of Myconi; but they are

there buffeted by those which cannot penetrate into the anchorage of Tourlon. The Greeks of Myconi are great navigators; traversing the sea that surrounds them in their boats, some of which are large. Addicted to maritime occupations, they neglect the culture of their lands, from which, though dry and mountainous, they might derive considerable advantage. All the productions which they yield, though in small quantity for want of culture, are of a very good quality, such as wheat, barley, raisins, figs, olives, and cotton. Wine and fruits are here excellent; but though wine is almost the only article of commerce in Myconi, it is mixed with water in order to increase its quantity, whilst its real value is thus diminished. Game abounds; the most delicate birds arrive in numerous flights twice a year, in spring and autumn; and, in short, the island affords in profusion all the necessary or agreeable articles of life. But water is scarce; and, during the great heat of summer, every thing is dry in the fields, and bears the aspect of aridity. This drought has, without doubt, restricted the operations of agriculture, and induced men to seek abroad means of existence more certain and less laborious. The inhabitants, who are about 3000, are chiefly Greek Christians, governed by a cadî; the women are principally occupied in spinning cotton which grows in their island, and manufacturing it into stockings or cloths. An uninhabited shoal, to which the Myconites send flocks, affords a good anchorage a league E. of Myconi: it is called "Tragonisi," i. e. He-goat island, because it formerly, in all probability, contained both he and she-goats; but none are now seen there. Lower, and a little farther from Myconi, are two points of arid rocks, which the Greeks call "Stapodia," and the navigators, "Le Deux Frères," or "The Two Brothers." N. lat. 37° 27'. E. long. 25° 23'.—Also, a town or village on the W. coast of the fore-mentioned island. N. lat. 37° 26'. E. long. 25° 20'.

MYCONOIDES, from *μυκίνη*, a nostril, and *ειδος*, resemblance, in *Surgery*, a term anciently applied to ulcers, which were covered with a large quantity of matter like mucus.

MYCTERIA, the Jabiru, in *Ornithology*, a genus of birds belonging to the order of Grallæ. The bill is long, bending upwards, and acute; upper mandible triangular; the nostrils are small and linear; there is no tongue, or a very small one; and the feet have four toes. There are three

#### Species.

AMERICANA, or American Jabiru. White; quill and tail-feathers purplish-black. It is about the size of a turkey. The bill is long, stout, and of a black colour; the whole plumage is white, except the head, and about two-thirds of the neck, which are bare of feathers, and of a blackish colour; the remainder is also bare, and of a fine red; on the hind-head are a few greyish feathers; the legs are strong, of a great length, and covered with black scales; wings and tail even at the end. This bird is found in all the savannas of Cayenne, Guiana, and other parts of South America. It is migratory and gregarious. It makes its nest in great trees, which grow on the borders of rivers; lays two eggs, and brings up the young in the nest till they can descend to the ground. The colour of the young birds is grey; the second year it changes to rose-colour, and the third to pure white. They are very wild and voracious, and their food is fish, which they devour in great quantities. The flesh of the young birds is said to be good eating, but that of the old is hard and oily.

ASIATICA, or Indian Jabiru, is of a large size, the bill is dusky, almost straight above, and gibbous near the forehead;



head; the under mandible swelled beneath; and from the base of the bill there passes through and beyond the eye a black streak. The general colour of the plumage is white; the lower half of the back, the prime quills, and tail, are black; the legs a pale red. This species inhabits the East Indies, and feeds on snail.

**NOVÆ-HOLLANDIÆ**, New Holland Jabiru. Body above purplish-green, but beneath, also on the neck and shoulders, it is white. It is found in New Holland. There was a specimen in the Leverian Museum. The head is purplish, spotted with white; the neck is feathered; the irids yellow; first quill-feathers white; tail black and white.

**MYDEN**, in *Geography*, a town of Candahar, capital of a district in Cabulistan; 24 miles S.W. of Cabul.

**MYDON**, from *μυδν*, to grow putrid, in *Surgery*, fungous flesh in a fistulous ulcer.

**MYDORGE, CLAUDE**, in *Biography*, an able mathematician of the 17th century, was born at Paris in 1585, and was educated to the law. He became counsellor to the Chatelet, and afterwards treasurer of France in the generality of Amiens. These places he held more on account of the rank which they conferred on him, than for the profit which they yielded. He was too much attached to mathematical pursuits, and master of too ample a fortune, to pursue his profession with that kind of eagerness, which can only insure success. He was the friend and acquaintance of Des Cartes, and entered into a vindication of him, in the dispute which he had with M. Fermat, and was afterwards a mediator of the peace which was made between those learned men in 1638. In the same year Mydorge published a Latin treatise "On Conic Sections," in four books, which Merenne has inserted in his "Abridgment of Universal Geometry." In 1642, he and Des Cartes received an invitation from sir Charles Cavendish to settle in England, which he declined, on account, as it is supposed, of the breaking out of the civil wars in this country. He died at Paris in 1647, in the sixty-third year of his age. He was a practical mechanic, as well as an able mathematician, and with so much zeal was he inspired for the interests of science, that he spent more than a thousand crowns on the fabrication of glasses for telescopes, burning mirrors, mechanical engines, and mathematical instruments. Moreri.

**MYDRECHT**, in *Geography*, a town of Holland, in the department of Utrecht; 12 miles W.S.W. of Utrecht.

**MYDRIASIS**, from *μυδρ*, to abound with moisture, in *Surgery*, a preternatural dilatation of the pupil; so named, because it was supposed to proceed from a redundancy of moisture, or humours. It is an ordinary symptom of the gutta serena, apoplexy, compression of the brain, &c.

**MYEDZYREE**, in *Geography*, a town of Poland, in Volhynia; 42 miles N. of Constantinow.

**MYERSTOWN**, a town, or rather village, of America, in Dauphin county, Pennsylvania, situated on the N. side of Tulpehocken creek, and containing about 25 houses; 77 miles from Philadelphia.

**MYGBAOTH**, in the *Jewish Antiquities*, a kind of mitre worn by the priests. See **CIDARIS**.

**MYGDONIA**, in *Ancient Geography*, a province of Asia, in Mesopotamia, so called, according to Theodoret, from the river Mygdonius; but, according to Pliny (l. vi. c. 12.) it derived this name from the Mygdonians of Macedonia, who seem to have sent hither a colony. Strabo (l. xvi.) concurs in this opinion; and informs us, that Mygdonia extended along the Euphrates from Zeugma to Thapsacus, and contained Nisibis, which was denominated "Antiochia Mygdonia." Hence it appears that Mygdonia of Mesopotamia comprehended the western part of Mesopotamia.

—Also, a country of Macedonia, bounded on the N. by Pelagonia, on the E. by Calcidides, on the S. by Pzonion, and on the W. by the province of Euriopus. Herodotus, Pliny, and Ptolemy mention this province. See **MACE-  
DONIA**.

**MYGDONIUM MARMOR**, a name given by the ancients to a species of marble much used in their larger buildings. It was white variegated with black; but that black rather disposed in clouds and spots than veins. It is confounded with the docimenum marmor, by some writers; but that was always of a pure white, without the least variegation.

**MYGDONIUS**, in *Ancient Geography*, a river of Mesopotamia, which was formed of many streams, and discharged itself into the Chaboras.

**MYGENES**, in *Geography*, one of the smallest, and the most westerly, of the Faroer islands, in the North sea. N. lat. 61° 53'. E. long. 10° 32'.

**MYGINDA**, in *Botany*, received its name from Jacquin, in honour of Francis von Mygind, a German nobleman, an aulic counsellor; not only a great patron of the botanic garden at Vienna, but a practical scientific botanist. Several new plants, collected by himself in Barbadoes, were described from his herbarium by Jacquin.—Jacq. Amer. 24. Linn. Gen. 68. Schreb. 93. Willd. Sp. Pl. v. 1. 722. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 1. 282. Juss. 378. Lamarck Dict. v. 4. 335. Illustr. t. 76. (Rhamnus; Linn. Gen. 58. Schreb. 78. 820. Juss. 378. Crotopetalum; Browne Jam. 145.)—Class and order, *Tetrandria Tetragynia*. Nat. Ord. *Dumose*, Linn. *Rhamni*, Juss.

Gen. Ch. Cal. Perianth inferior, very small, of one leaf, in four deep equal segments, permanent. Cor. Petals four, alternate with the segments of the calyx, equal, roundish, flat, widely spreading; their claws broad, and sometimes cohering. Stam. Filaments four, awl-shaped, erect, or spreading, shorter than the corolla; anthers roundish. Pist. Germen superior, roundish; styles four, erect, short, more or less combined at their base, which is subequally elongated; stigmas acute. Peric. Drupa globose. Seed. Nut ovate, acute, of one cell.

Ess. Ch. Calyx in four deep segments. Petals four, alternate with the calyx, broad at the base. Drupa superior, globose.

1. *M. uragoga*. Downy-leaved Myginda. Linn. Sp. Pl. 1661. Jacq. Amer. 24. t. 16. Swartz. Prodr. 39. (Rhamnus Crotopetalum; Linn. Sp. Pl. 169. Crotopetalum; Browne Jam. 145. t. 17. f. 1.)—Leaves ovate, acute, finely serrated, downy, as well as the branches and flower-stalks. Native of South America, and the West Indies. Jacquin found it very plentifully about Carthagena, where the root is esteemed for its powerful diuretic qualities; as well as in St. Martin's, one of the Caribbee islands; generally growing not far from the sea. Browne gathered it in Jamaica, in the woods below Marta-Bree river, in St. James's, growing among rocks. This is an upright shrub, three or four feet high near the shore, but almost thrice as much in the woods, with few branches; which, when young at least, are square and finely downy, with spreading hoary hairs. Root thick, woody, solid, whitish, and very bitter; its bark orange-coloured internally. Leaves mostly opposite, an inch long, more or less, on short, reddish, downy footstalks, ovate, acute, finely and sharply serrated; occasionally somewhat heart-shaped at the base; clothed on both sides with fine, soft, spreading, shortish hairs. Flower-stalks axillary, shorter than the leaves, opposite, slender, downy, two or three times forked. Flowers small, of a very deep shining red. Fruit red, soft, the size of a small pea.



When the herbarium of sir Joseph Banks was, in 1786, compared with the Linnæan collection, the original specimen of Jacquin in the former, (purchased by sir Joseph, with his herbarium, many years before,) was found to accord precisely with that of Browne in the latter, which had been bought, amongst Browne's plants, by Solander, and sent to Linnæus. This last proves to be the very identical specimen, drawn by Ehret for Browne's plate. That drawing nevertheless, in its total smoothness, as well as the form of the leaves and their notches, agrees better with the species we shall next describe, which has therefore been generally taken for the plant of Browne, on which the *Rhacoma Crofopetalum* of Linnæus depends. The disagreement between the two original investigators of this plant, as to the number of its styles, may be accounted for from the elongation which takes place in the combined bases of those organs, as in *Rosa arvensis*, and several other flowers, subsequent to impregnation. The styles are indeed so much united, that perhaps the genus ought to be reckoned monogynous, especially if we were to judge by the second species; yet even about that botanists differ, as we shall presently see. Dr. Swartz has confirmed the generic identity of the shrubs in question, but not having seen Browne's specimen, was misled by this figure to persist in the old error.

2. *M. Rhacoma*. Smooth-leaved two-coloured Myginda. Swartz Ind. Occ. v. 1. 340; excluding the synonyms. Jacq. Coll. v. 4. 173. Ic. Rar. t. 311. Willd. n. 2.—Leaves elliptic-obovate, obtuse, crenate, smooth; paler beneath. Styles combined at the base.—Native of the sandy sea-coast, on the west side of Jamaica. Swartz. We have specimens from Dr. Wright, who observed that the flowers had certainly four styles. Jacquin, in his beautiful plate, represents them as united nearly all the way up, and so Swartz describes them. This shrub is very bushy, two or three feet high, smooth in all its parts, except perhaps the partial flower-stalks, and minute bracteas. The bark is ash-coloured. Leaves from half an inch to an inch long, elliptical or somewhat obovate, obtuse, crenate; much paler beneath, at least in the dried specimen. Flower-stalks scarcely more than once divided, or three-flowered. In other respects this much agrees with the foregoing. Swartz describes the claws of the petals as united into a tube, and their border fringed. This last character we cannot discern, either in the present or former species, though upon it Browne founded his name of *Crofopetalum*.

3. *M. latifolia*. Broad-leaved Myginda. Swartz Ind. Occ. v. 1. 342. Vahl. Symb. v. 2. 32. Willd. n. 3.—Leaves elliptical, emarginate, slightly crenate, smooth. Stigmas sessile.—Native of the West Indies. Mr. Masson gathered our specimens in the island of Nevis. This appears to be a larger shrub, in all its parts, than the foregoing, with numerous branches, crossing each other. Every part is quite smooth. Leaves copious, opposite, about an inch and a half long, and an inch broad, coriaceous, elliptical, obtuse, emarginate, slightly and rather distantly crenate; of a palish, opaque, and so somewhat glaucous green, on both sides. Flower-stalks much shorter than the leaves, forked, scarcely more than three-flowered, the two lateral flowers divaricated, the central one sessile. Petals reflexed. Germen elliptical. Stigmas from two to four, sessile, broad and obtuse.

4. *M. pilans*. Pale-leaved Myginda. Banks MSS.—Leaves elliptical, very obtuse, crenate, smooth, nearly sessile. Styles combined. Petals wavy.—Gathered in Antigua by the late Mr. Masson, and communicated by sir Joseph Banks. This is the size of the last, with which it agrees in habit, but the leaves are of a lighter more yellowish-green, on

shorter stalks, and in some degree scattered; the adult ones paler beneath. The flower-stalks are twice forked; the central flower, as well as the rest, elevated on a slender smooth partial stalk. Calyx broad and flat. Petals widely spreading, more or less undulated at the margin. Styles as much united as in *M. Rhacoma*, with similar acute stigmas.

The first three species are said to have been introduced, into the English gardens, between the years 1790 and 1798. They are kept in the stove, and are evergreen, flowering at various times. Jacquin says the second blossomed with him the year after the seed was committed to the ground, the plant not being above six inches high. We have never heard of the fourth being brought to Europe. S.

MYIAGRUS DEUS, in the *Heathen Mythology*, a name given sometimes to Jupiter, and sometimes to Hercules, on occasion of their being sacrificed to for the driving away the vast numbers of flies which infested the sacrifices on certain public occasions. The word is usually spelt *Myagrurus*; but this must be an error, as this word does not express the fly-destroyer; but the mouse-destroyer; and we have it sufficiently testified by the ancients, that flies were the only creatures against whom this deity was invoked. Pliny calls this deity also *Myiodes*, and tells us, that the flies which used to pester the Olympic rites went away in whole clouds, on the sacrificing a bull to this god. We find in Athenæus also, that this sacrificing to the god of flies, at the Olympic games, was a constant custom. Some distinguish these two deities, and tell us, that the latter, or *Myiodes*, used to visit the nations in vengeance, with a vast multitude of flies; and that, on paying him the due honours of a sacrifice, they all went away again; and this seems to agree with what Pliny tells us in some places.

At the time of the Olympic games, Jupiter was worshipped under the name of the *Apomyos*, or *Myiagrurus Deus*, to supplicate the destruction of those troublesome creatures. This happened only once in many years, when the sacrifices were performed there; but the Elians worshipped him continually under this name, to deprecate the vengeance of heaven, which usually sent, as they expressed it, an army of flies, and other insects, towards the latter end of the summer, that infested the whole country with sickness and pestilence. See BEELZEBUB.

MYIODES DEUS, a name given sometimes to Hercules, but more frequently to Jupiter, to whom a bull was sacrificed, in order to make him propitious in driving away the flies that infested the Olympic games.

MYLA, in *Ancient Geography*, a river of Sicily, which ran, according to Livy, between Syracuse and Leontium.

MYLÆ, or MYLES, now *Meluzza*, a town of Sicily, situated towards the West. This small town has been recognised as the place near which the fleet of Augustus, under the command of Agrippa, obtained an advantage over that of the younger Pompey.—Also, a strong town of Thessaly, which, however, was taken, and abandoned to pillage.

MYLANTIA, a promontory of the isle of Rhodes, in which was the town of Camirus.

MYLAON, a small river of Arcadia, W. of Megalopolis, which ran from the S.W. to the N.E., and emptied itself into the Alpheus.

MYLASA, or MYLASSA, a town of Asia Minor, in Caria. According to Steph. Byz. this town was founded by Mylasus, son of Chrysari; and according to Herodotus, it was not so ancient as the temple of the Carian Jupiter, built in its vicinity. Mylasa was for some time subject to kings, but it partook of the vicissitudes to which Caria



was subject. It was taken by Mithridates, and afterwards by Labienus, whose father was a lieutenant of Cæsar. The Romans left it free, whence Pliny calls it "Mylasa Libera." Strabo informs us, that it was one of the most magnificent cities of antiquity, and one of those which was admired on account of its porticoes and various monuments; a quarry of white marble in its neighbourhood furnished ample materials for the construction of its numerous edifices. The Milesians had two temples dedicated to Jupiter; one situated in the city, appropriated to Jupiter Oſogo or Ogoa, and another at Laprauda, on the road to Alabanda, which was consecrated to Jupiter Stratius, or the warrior. This was much respected by the Carians, who came hither from remote parts to offer their vows: a causeway, called "the sacred way," 60 stadia in length, led from Mylasa to this temple. Between these temples there was another dedicated to Augustus and the divinity of Rome. Pococke saw it entire; but it has been since his time destroyed, and the materials have been used for constructing a mosque.

MYLASSENSE MARMOR, in the works of the ancients, a name used for a species of marble dug near a city of that name in Caria. It was of a black colour, but with an admixture of purple; the purple not disposed in veins, but diffused through the whole mass: it was much used in building among the Romans.

MYLAU, or MUHLAU, in *Geography*, a town of Saxony, in the Vogtland, on the Gollah; eight miles N.E. of Plauen.

MYLE, a word used by some authors as a name for the patella or limpet, and by others to express what we call a mole, or false conception, in the uterus.

MYLES, in *Geography*, a town of the island of Samos; two miles W. of Cora.

MYLIÆ, or MYLIAS, in *Ancient Geography*, a country which originally made a part of Greater Phrygia, but, in process of time, it was referred to Lycia.

MYLOGLOSSI, in *Anatomy*, a pair of muscles, thus called, because arising about the backside of the molares, or grinding-teeth, and inserted into the ligament of the tongue: helping to pull it upwards.

These are the same with what Mr. Cowper calls styloglossi.

MYLO-HYOIDEUS, a muscle belonging to the os hyoides. See DEGLUTITION.

MYLON, in *Ancient Geography*, a town of Egypt, mentioned by Athenæus and Steph. Byz.; which gave name to the Myropolite nome.

MYLON, in *Surgery*, is used for the largest tumours of the staphylomatous kind in the corner and uvea of the eyes. See STAPHYLOMA.

MYLO-PHARYNGEUS, in *Anatomy*, a name given to some of the fibres of the constrictor pharyngis superior.

MYLOTHROS, in *Ancient Music*, the name of a Greek song, proper for millers and bakers. The same, perhaps, as the *Epiaulia*.

MYNAMA, in *Geography*, a town of Hindoostan, in Bahar; 17 miles S.E. of Durbungah. N. lat. 26° 1'. E. long. 86° 21'.

MYNAMANIES, or MINOMANIES, a tribe of Indians, who, with the tribes of Chippeways and Saukeys, live near Bay Puan, and about 20 or 30 years ago could furnish 550 warriors. The Minomanies have about 300 fighting men.

MYNAR, a town of Hindoostan, in Bahar; four miles N.E. of Bettial.

MYNATNAGUR, a town of Bengal; 25 miles N.N.W. of B. g. l. pour.

MYNATPOUR, a town of Hindoostan, in Bahar; 32 miles N. of Durbungah. N. lat. 26° 38'. E. long. 86° 15'.

MYNDER, a shoal in the straits of Macassar, near the coast of the island of Celebes. S. lat. 2° 12'. E. long. 118° 55'.

MYNDUS, or MINDUS, in *Ancient Geography*, a small town, with large gates, of Asia Minor, in Caria, situated at the extremity of an isthmus, N.W. of Halicarnassus.

MYNSICHT, ADRIAN VON, M.D., in *Biography*, count palatine, consulting physician to the duke of Mecklenburg and several other princes, was celebrated for his knowledge in chemistry, about the beginning of the 17th century. He was the author of a work upon this subject, which was in great vogue in its time, and passed through numerous editions. It was entitled "Thesaurus et Armamentarium Medico-chymicum, hoc est, selectissimorum, contra quosvis morbos, pharmacorum conficiendorum secretissima ratio, cui in fine adjunctum est Testamentum Hadrianeum de auro Philosophorum Lapide," Hamburg, 1631, &c. There is a great deal of credulity, and not a little mystery, in the description of the various chemical, medicinal, and alchemical processes, which this work contains, and of the potent virtues ascribed to them in the treatment of diseases. Several of his preparations, however, came into common use, and were long retained in the dispensaries. Eloy Dict. Hist. Gen. Biog.

MYO, in *Geography*, a small island in the East Indian sea, formerly inhabited; but now not occupied by a prohibition of the Dutch, lest spices should be smuggled; subject to the king of Ternate. N. lat. 1° 13'. E. long. 122° 20'.—Also, a town of Mexico, in the province of Culiacan; 110 miles N.W. of Culiacan.

MYOCEPHALON, from *μυζ*, a fly, and *κεφαλη*, the head, in *Surgery*, a tumour, formed on the iris, and resembling the head of a fly. See IRIS, *Prolapsus of*.

MYOCEPHALUS, a name given by some authors to the distemperature of the eyes, commonly known by the name of a staphyloma.

MYOCTONUM. See ACONITE.

MYODES, PLATISMA, a name given by some anatomical writers to what is called by others the quadratus genæ; it is a muscular expansion in the neck.

MYOLOGY, MYOLOGIA, one of the technical divisions of anatomy: the part which includes the muscles. See MUSCLE.

MYOMANCY, a kind of divination, or method of foretelling future events by means of mice.

Some authors hold myomancy to be one of the most ancient kinds of divination; and think it is on this account that Isaiah, lxvi. 17. reckons mice among the abominable things of the idolaters. But, beside that, it is not certain, that the Hebrew word עכבר, used by the prophet, signifies a mouse, it is evident it is not the divination by that animal, be it what it will, that is here spoken of; but the eating of it.

MYONIA, in *Ancient Geography*, a town of Greece, belonging to the Locri Ozolii, situated on a very lofty mountain, which had a sacred wood and an altar dedicated to the meek or gentle gods, to whom sacrifices were offered in the night. "Posidonium" was a place near this town, dedicated to Neptune, where was a temple dedicated to this deity, but without statues, according to Pausanias.

MYONIMA, in *Botany*, so called by Commerſon, from



*μῦς*, a mouse, and *ὀνίς*, to be serviceable, in allusion to the French name, *Bois de rat*; because the fruit is a favourite food of that genus of animals.—Juss. 206. Willd. Sp. Pl. v. 1. 614. Lamarck Dict. v. 4. 397. Illustr. t. 68.—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Rubiaceae*, Juss.

Gen. Ch. *Cal.* Perianth superior, very small, nearly entire. *Cor.* of one petal; tube short, cylindrical; limb in four deep, equal, blunt segments. *Stam.* Filaments four, inserted into the tube of the corolla, alternate with the segments of the limb; anthers oblong, projecting beyond the corolla. *Pist.* Germen globose, inferior, style short, cylindrical; stigma capitate. *Peric.* Drupa dry, roundish, depressed, destitute of any crown or rim. *Seed.* Nut of four cells, with four kernels, which are externally convex.

Eff. Ch. Calyx minute, nearly entire. Corolla in four deep equal segments, with a short tube. Drupa inferior. Nut of four cells.

1. *M. obovata*. Broad-leaved Rat-feed. Willd. n. 1. Lamarck, fig. 1.—Leaves obovate, obtuse, with a small point. Fruit obscurely quadrangular.—Gathered by Commerçon, as well as by Sonnerat, in the isles of Bourbon and Mauritius. A smooth shrub, with numerous opposite branches, whose bark is cracked and greyish. Leaves on short stalks, opposite, near two inches long and one broad, obovate, entire, obtuse, with more or less of a short point; their upper surface shining as if varnished; the under opaque and paler; both beautifully reticulated with transverse interbranching veins. Flower-stalks axillary, opposite from the uppermost leaves, mostly two or three-flowered, scarcely so long as the leaves. Calyx sometimes obscurely four-toothed. Corolla hardly half an inch in diameter. Fruit reddish, the size of a small grape. Bractæes small, acute, opposite at the division of the flower-stalks.

2. *M. lanceolata*. Myrtle-leaved Rat-feed. Willd. n. 2. (*M. myrtifolia*; Lamarck. n. 2. fig. 2.)—Leaves elliptic-lanceolate, acute. Fruit spherical.—Native of the island of Mauritius. The leaves are much smaller than in the foregoing, and of a narrower more lanceolate shape, somewhat revolute, entire, their upper surface highly polished. Fruit reddish, more exactly globular than in the former species.

MYONNESOS, in *Ancient Geography*, a town of Ionia, between Teios and Lebedus. Steph. Byz. Strabo makes it a peninsula, and Livy a promontory. It was an island of the Teians, according to Thucydides. It appears to have been placed on the coast N.W. of Lebedus, and that the land projected in form of a peninsula.—Also, an island of Thessaly, over-against Larissa, according to Strabo.

MYOPARO, among the Romans, a kind of ship, which partly resembled a merchant-ship, and partly a ship of war, and was that which pirates mostly used.

MYOPIA, MYOPIASIS, from *μῦς*, to shut, and *ὤψ*, the eye, in *Surgery*, that kind of shortsightedness, in which the eyes are half shut, and continually winking.

MYOPORUM, in *Botany*, a name contrived by Dr. Solander, to express the minute pellucid spots, for which the foliage of the genus we are about to describe is remarkable. The word is formed of *μῦς*, to shut up, and *πορος*, a pore; those spots being, as it were, pores closed with some semitransparent substance. Forst. Prod. 44. Schreb. 424. Willd. Sp. Pl. v. 3. 381. Mart. Mill. Dict. v. 3. Brown Prodr. Nov. Holl. v. 1. 515. (Pogonia; Andr. Repos. v. 3. 212. Andreusia; Venten. Malmaif. 108.)—Class and order, *Didynamia Angiospermia*.

Nat. Ord. *Perfonate*, Linn. *Vitices*, Juss. *Myoporinae*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, in five deep, ovato-lanceolate, acute, erect, permanent segments. *Cor.* of one petal, somewhat salver-shaped; tube short, rather bell-shaped; leaf in five deep, nearly equal segments, generally hairy within. *Stam.* Filaments four, awl-shaped, shorter than the corolla, inserted into its tube, two of them rather the shortest; anthers vertical, arrow-shaped. *Pist.* Germen superior, elliptic-oblong, compressed, style cylindrical, curved, the length of the stamens; stigma capitate. *Peric.* Drupa pulpy. *Seed.* Nut solitary, of four or five cells, with solitary kernels; or of two cells, with two kernels in each.

Eff. Ch. Calyx in five deep segments, inferior, permanent. Corolla bell-shaped; its limb in five deep nearly equal segments. Stigma obtuse. Drupa pulpy. Nut of from two to five cells.

Obs. We have found five cells in all the fruits we have examined. Willdenow is mistaken in supposing this genus not distinct from *Citharexylum*. The latter has a tubular calyx, with short teeth, and two separate nuts, of two cells each, nor is the shape of the corolla like that of *Myoporum*. Those who called some of the species *Pogonia* and *Andreusia*, were by no means aware of the original name published, many years before, by Forster.

Section 1. *Leaves alternate, entire.*

1. *M. ellipticum*. Elliptical Myoporum. Brown n. 1. (*Pogonia glabra*; Andr. Repos. t. 283. *Andreusia glabra*; Venten. Malmaif. t. 108.)—Leaves elliptic-lanceolate, pointed, tapering at the base. Branches smooth. Segments of the calyx lanceolate, very sharp. Mouth of the corolla slightly hairy; limb smooth.—Native of the tropical regions of New Holland, as well as of the country near Port Jackson. It was raised from seed in 1790, by the late Mr. Robertson at Stockwell; is readily propagated by cuttings, and flowers freely in January or February, though rather more impatient of damp and cold than some other shrubs of New South Wales.—The leaves are smooth, like the whole of the genus. Flowers axillary, mostly solitary, on foot-stalks, drooping, white, the size of lily of the valley, but not of the same hemispherical form, their corolla being rather contracted in the middle, its limb spreading suddenly. There are no bractæes nor stipulas in the whole genus.

2. *M. tenuifolium*. Narrow-leaved Myoporum. Forst. Prodr. 44. Br. n. 2.—Leaves lanceolate, with long taper points. Branches smooth. Segments of the calyx lanceolate, acute. Corolla smooth.—Native of the tropical part of New Holland. Gathered in the Sandwich islands by Mr. Menzies.—Differs from the former in having much narrower and more tapering leaves; several flowers, for the most part, together; whose corolla is not hairy, and the segments of whose calyx are shorter and more ovate.

3. *M. acuminatum*. Pointed-leaved Myoporum. Br. n. 3.—Leaves broadish-lanceolate, with a small point; tapering at the base. Branches smooth. Segments of the calyx ovato-lanceolate. Corolla bearded.—Found near Port Jackson, New South Wales. The dried leaves have a glaucous hue, and there are several drooping flowers together from the bosom of each.

4. *M. montanum*. Mountain Myoporum. Br. n. 4.—“Leaves linear-lanceolate, very sharp; tapering at the base. Branches smooth. Segments of the calyx linear, acute.”—Gathered in New South Wales by Mr. Brown. We have seen no specimen.

5. *M.*



5. *M. humile*. Dwarf Myoporum. Br. n. 5.—“Leaves linear, somewhat spatulate, bluntish, without veins. Stem procumbent.”—Found by Mr. Brown on the south coast of New Holland.

6. *M. parvifolium*. Small-leaved Myoporum. Br. n. 6.—“Leaves linear, bluntish; tapering at the base; sometimes toothed at the extremity; glandular, as well as the branches. Flower-stalks here and there deeply divided, above half the length of the leaves. Stem diffuse.”—Native of the same country, and suspected by Mr. Brown to be perhaps but a variety of the last.

Section 2. *Leaves alternate, serrated. Fruit swelling. Nut of four cells.*

7. *M. ascendens*. Ascending Myoporum. Br. n. 7.—“Leaves obovate-oblong, bluntish, bluntly serrated from beyond the middle. Branches smooth, ascending. Stem diffuse.”—Native of the same country.

8. *M. letum*. Shining-leaved Myoporum. Forst. n. 1. Willd. n. 1.—“Leaves oblong, smooth, naked and shining; slightly serrated at the extremity. Corolla hairy.”—Native of New Zealand.

9. *M. pubescens*. Downy-leaved Myoporum. Forst. n. 2. Willd. n. 2.—“Leaves oblong-elliptical, serrated, downy.” Found by Forster in the same country as the last. This appears to be the only species that has any pubescence, except in the flower.

10. *M. crassifolium*. Thick-leaved Myoporum. Forst. n. 3. Willd. n. 3.—“Leaves fleshy, oblong, slightly serrated.”—Native of Botany island. Forster.

11. *M. insulare*. Insular Myoporum. Br. n. 8.—“Leaves lanceolate; tapering at the base; serrated at the end. Branches smooth; glutinous when young. Stem erect.”—Gathered by Mr. Brown in the south part of New Holland.

12. *M. serratum*. Serrated Myoporum. Br. n. 9.—(Pogonia tetrandra; Labill. Nov. Holl. v. 1. 59. t. 83.)—“Leaves lanceolate, very sharp, serrated. Branches smooth. Gathered by Labillardiere in Lewin's land, and by Mr. Menzies at King George's Sound. Mr. Brown also observed it in the neighbouring parts of New Holland. The leaves in our specimen are rather broader, and more obovate, than in the figure cited. Flowers many together, erect.

13. *M. tuberculatum*. Tubercular Myoporum. Br. n. 10.—“Leaves lanceolate, acute, serrated. Branches covered with glandular tubercles.”—Gathered by Mr. Brown in the south of New Holland. We have seen no specimen of his plant, but we possess one, brought by Mr. Menzies from the Sandwich islands, which answers to this character, except that the leaves are entire. If this be constant, our plant should be introduced between the first and second species. Its corolla is internally smooth. Segments of the calyx ovato-lanceolate, with very sharp points. The leaves are three or four inches long, and one broad, elliptic-lanceolate; their pores minute.

14. *M. viscosum*. Glutinous Myoporum. Br. n. 11.—“Leaves elliptical, acute, serrated, reflexed. Branches viscid and glandular.”—In the south of New Holland. Brown.

Section 3. *Leaves alternate, toothed. Fruit compressed. Nut frequently with but two cells.*

15. *M. platycarpum*. Broad-fruited Myoporum. Br. n. 12.—“Leaves linear-lanceolate; toothed at the end. Branches smooth. Fruit compressed, of two cells, four times as long as the calyx. Stem erect.”—From the same country. Brown.

16. *M. debile*. Slender-stemmed Myoporum. Br. n. 13. (Pogonia debilis; Andr. Repos. t. 212.)—“Leaves lanceolate; toothed at the end; entire at the base. Fruit

slightly compressed, shorter than the calyx. Flower-stalks solitary. Stem prostrate.—Native of the country near Port Jackson, from whence it was sent to England in 1793, by colonel Paterfon. The stem is said to be naturally prostrate, but it may be trained to a considerable extent, against a stick or trellis. The branches are alternate, purplish, warty. Leaves smooth, toothed here and there, but many of them are quite entire. Flowers axillary, on short stalks, erect, for the most part solitary, very rarely two together. Calyx large, with broad lanceolate segments. Limb of the corolla purplish-blue, with a white downy mouth. This blossoms in the greenhouse from April to September, and ripens seed, by which, as well as by cuttings, it is readily increased, if assisted by heat.

17. *M. diffusum*. Spreading Myoporum. Br. n. 14.—“Leaves lanceolate, with somewhat recurved teeth at their base; toothed or entire at their extremity. Stems diffuse, glandular. Flower-stalks solitary. Fruit slightly compressed, shorter than the calyx.”—Gathered by Mr. Brown in the tropical part of New Holland. It seems very nearly akin to the 13th species; but we have seen no specimen by which to form a judgment.

Section 4. *Leaves opposite.*

18. *M. oppositifolium*. Opposite-leaved Myoporum. Br. n. 15.—“Leaves sessile, heart-shaped, serrated.”—Found by Mr. Brown, on the southern coast of New Holland.

The stem in every known species is shrubby. Young branches, and tender leaves, often coloured and viscid. There is scarcely any pubescence, except within the flower, whose style, as well as corolla, is often bearded or hairy. The leaves of our ninth species only are described as downy.

MYOPS, MYOPIS, a person who is short-sighted; or, as we popularly call it, *purblind*.

The word is Greek, μυωψ, compounded of μυς, mouse, and ωψ, eye; because, we suppose, the same conformation of the eye is observed in mice.

Myopes are properly such as see remote objects confusedly, and near ones distinctly. Those who labour under the opposite defect, are called *presbyta*.

The defect of myopes is not in the optic nerve, the pupil, or the like; but in the form of the cornea or crystalline, or the distance of the retina from the same. The crystalline or cornea being rounder or more convex than ordinary, the rays will be rendered more convergent than ordinary, in passing through the same. (See REFRACTION.) By this means they will be brought to meet or concur at a less distance from the crystalline; so that if the retina be at its usual distance, they will concur before they reach it. It is the too great nearness, then, of the retina to the crystalline, that constitutes the myopia.

MYOPS, in *Natural History*, the ox fly, an insect usually confounded with the breeze-fly, but really differing very much from it. This is common in woods and about pathways, and never fixes on any other creatures except oxen. It has a long and somewhat flat body, and is of a blackish grey colour.

MYORESHALON, in *Surgery*, a closure of the pupil. See PUPIL.

MYOSHORMOS, in *Ancient Geography*, a sea-port of Egypt, placed by Ptolemy and Pliny in the Red sea. Arrian says, that it was one of the most celebrated ports of this sea. It was also called the “Port of Venus.”

MYOSOTIS, in *Botany*, derived from μυς, mouse, and ωτις, a little ear, the diminutive of ως or ες, an ear, has been applied by the ancients, as well as by many more modern botanists, to several plants whose leaves, in their shape



shape and soft hairiness, answer to the above idea. Among them is the present genus, for which Dillenius and Linnæus have retained the name.—Dill. Gen. 99. t. 3. Linn. Gen. 73. Schreb. 99. Willd. Sp. Pl. v. 1. 746. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 212. Prodr. Fl. Græc. v. 1. 112. Ait. Hort. Kew. ed. 2. v. 1. 385. Michaux Boreal-Amer. v. 1. 129. Brown. Prodr. v. 1. 494. Juss. 131. Lamarck Illustr. t. 91. Gærtn. t. 68.—Clas and order, *Pentandria Monogynia*. Nat. Ord. *Asperifolia*, Linn. *Borraginea*, Juss. and Brown.

Gen. Ch. *Cal.* Perianth inferior, five-cleft half way down, oblong, erect, acute, permanent. *Cor.* of one petal, valver-shaped; tube cylindrical, short; limb flat, half cloven into five, emarginate, obtuse segments; throat closed, with five, convex, prominent, little valves or scales. *Stam.* Filaments five, in the neck of the tube, very short; anthers very small, concealed by the scales. *Pist.* Germens superior, four in number; style thread-shaped, as long as the tube of the corolla; stigma obtuse. *Peric.* none, except the enlarged, erect calyx. *Seeds* four, ovate, pointed, smooth.

Ess. Ch. Corolla valver-shaped, five-cleft, slightly notched; its orifice closed with concave valves.

Obs. In some species the seeds are furnished with hooked bristles, though in general they are smooth.

1. *M. arvensis*. Mouse-ear Scorpion-grafs. Ait. Hort. Kew. ed. 2. v. 1. 286. (*Myosotis scorpioides*  $\alpha$ ; Sm. Fl. Brit. 212. Engl. Bot. t. 480. fig. col. *M. scorpioides arvensis*; Linn. Sp. Pl. 188.)—Seeds smooth. Leaves elliptic-lanceolate. Clusters many-flowered, without bractæas. Calyx ovate, with spreading incurved bristles.—Native of Europe, common on dry, sandy, or gravelly hillocks, and also in fallow fields, flowering throughout the summer.—*Root* annual, fibrous. *Stem* erect, round, branched in an alternate manner, leafy. *Leaves* obtuse. *Chylers* simple, terminal, reflexed and revolute, many-flowered. *Corolla* rather small, red before it opens, but afterwards blue, with a yellow or orange-coloured eye. The hairs of the calyx are incurved and spreading, so as to make it stick to the coats of animals.

Three varieties of this plant are enumerated in Dr. Smith's *Flora Britannica*, the last of which, *M. scorpioides*  $\delta$ , is now determined to be a new species, and called *M. palustris*. The other two,  $\beta$  and  $\gamma$ , may also be distinct from it, but as yet nothing has been decided respecting them:  $\beta$  is found on dry banks and walls, with minute, yellow flowers:  $\gamma$  occurs in shady situations, and is distinguished by larger, blue flowers, and a taller, more lax habit.—Linnæus characterises the leaves of *M. scorpioides* as callous at the tip, which mark however is not very generally perceptible in what we are now describing, nor are the lobes of the corolla so constantly notched as his generic definition implies.

2. *M. palustris*. Water Scorpion-grafs. Roth. Germ. v. 1. 87. v. 2. 221. Catal. v. 3. 30. Engl. Bot. t. 1973. and t. 480, uncoloured. (*M. scorpioides palustris*; Linn. Sp. Pl. 188. Sm. Fl. Brit. 212.  $\delta$ .)—Seeds smooth. Leaves oblong, clusters many-flowered, without bractæas, calyx funnel-shaped, its hairs straight and close-pressed. Common about rivers, clear streams, and ditches, in most parts of Great Britain, flowering in the summer. We are not surprised at Dr. Smith's feeling great pleasure in deciding upon this species conformably to Dr. Roth's opinion of it, "because," he says, "that acute botanist, applying our own principles, first suggested with regard to *Mentha*, to the present case, has found the pubescence of the calyx confirm all the other less decisive marks." The peculiarly distinctive characters of *M. palustris* are the creeping, perennial root, and the funnel-shaped calyx, clothed all over with

straight, rigid, shining, close-pressed hairs, and having its teeth broad, triangular, shorter than the tube. The corolla also is conspicuous, and generally admired for its enamelled brilliancy. It is of a beautiful pink flesh-colour before expansion, afterwards bright blue.

3. *M. nana*. Dwarf Scorpion-grafs. Sm. Prodr. Fl. Græc. v. 1. 112. Willd. n. 3. Villars Dauph. v. 2. 459. (*M. terglouensis*; Hacq. Pl. Alp. 12. t. 2. f. 6. Willd. *Lithospermum alpinum tomentosum minimum*; Tourn. Inst. 137.)—Seeds smoothish, serrulated at the margin. Stem simple, with few flowers. Leaves oblong, villous.—Found on the summits of the Alps by Villars, who says it is very rarely to be obtained, as growing amongst the most elevated craggy rocks. A native also of Greece.—Stems about two inches high, extremely slender. Leaves very small, obtuse, and woolly. Flowers rather fragrant, and of a beautiful bright blue colour, which they retain for a long time after drying. Seeds three or four, sometimes five, triangular, embroidered with a sort of membranous fillet at the edge.

4. *M. frutesca*. Shrubby Scorpion-grafs. Linn. Mant. 201. Willd. n. 4.—Seeds smooth. Stem shrubby, smooth.—Native of the Cape of Good Hope.—Stem a foot high, woody, perennial, smooth and branched. Branches numerous, bearing the flowers at the summit of the stem. Leaves alternate, linear, smooth, except a few close-pressed, straggling hairs. Flowers in terminal spikes, all turning one way, sessile, very minute. Fruit small.

5. *M. spatulata*. Spatulate Scorpion-grafs. Willd. n. 5. Forst. Prodr. 12.—Seeds smooth, leaves spatulate, hispid. Stalks axillary, solitary, single-flowered.—Native of New Zealand. This species is taken up by Willdenow from Forster's Prodomus, but as neither of those authors has described it, and we have no specimen before us, we are unable to furnish any further description of it.

6. *M. rupestris*. Rock Scorpion-grafs. Willd. n. 6. Pallas It. v. 3. 716. t. E. f. 3.—Seeds smooth. Leaves linear, villous. Clusters alternate.—A very common little plant in stony, exposed situations, on the hills of Dauria, where it produces a succession of flowers from May through the summer. Root perennial, simple, thread-shaped. Stems three inches long, spreading and ascending, rather hairy. Radical leaves crowded together, obovato-lanceolate, obtuse, hispid; those of the stem alternate, oblong-linear, whitish with hairs, and fringed at their edges from the base to the middle. Flowers of a deep azure colour, with a yellow throat. Seeds ovate, pointed, white.

7. *M. virginiana*. Virginian Scorpion-grafs. Linn. Sp. Pl. 189. (*Cynoglossum virginianum*; Morif. Hist. v. 3. 449. sect. 11. t. 30. f. 9.)—Seeds with hooked prickles. Leaves ovate-oblong. Branches divaricated.—Native of Virginia, and cultivated before 1699, by Mr. Jacob Bobart. Stem slender, annual. Leaves alternate, ovate, pointed at both ends, green on both sides. Flowers clustered, terminal, red. Seeds small, prickly, brown, and according to Linnæus "naked on the inside, angular, erect, fixed at the base like those of the following species. Fruit drooping."

8. *M. Lappula*. Prickly-headed Scorpion-grafs. Linn. Sp. Pl. 189. (*Cynoglossum minus*; Bauh. Hist. v. 3. 600. Column. Ecphr. 179. *Buglossum angustifolium*, semine echinato; Tourn. Inst. 134.)—Native of various parts of Europe, in a clayey soil. Cultivated in 1656 by Mr. John Tradescant, jun. It flowers from April to August. Root annual. Stem from a foot to about eighteen inches in height, erect, round, uneven, branched. Branches alternate. Leaves sessile, somewhat rugged, narrow, entire, bluntish. Flowers very small, opposite to the leaves, on short stalks. Corolla bright



bright blue. *Seeds* dotted, convex on one side, angular on the other, and mucronated at the edges with a double row of hooked prickles. Both Gærtner and Villars remark that the whole habit and character of this plant greatly resemble those of a *Cynoglossum*.

9. *M. squarrosa*. Squarrose Scorpion-grafs. Willd. n. 9. Retz. Obf. fasc. 2. g.—*Seeds* angulated, with hooked bristles. *Leaves* lanceolate, hairy, callous at the tip.—Found in Siberia, near the river Wolga. *Root* annual, branched. *Stem* (when cultivated) two feet high, roundish, hairy, densely branched; lower branches shorter. *Leaves* alternate, lanceolate, entire, obtuse, callous at the tip, furnished with close-pressed hairs, callous at their base. *Flowers* in long, loose clusters, alternate, small, blue, with a yellow throat. *Bractes* minute, linear-lanceolate. *Seeds* beautifully beset at the angles with two rows of uncinated bristles. The above description is from Retzius, who seems to think that what Pallas mentions as a variety of *M. Lappula*, growing near the Wolga, is the present species. See Pall. It. v. 3. 718. note.

10. *M. echinophora*. Echinophorous Scorpion-grafs. Willd. n. 10. Pall. It. v. 3. 717. t. I. i, f. 1.—*Seeds* covered with hooked prickles. *Flower-stalks* thickened at the top, axillary, solitary. *Leaves* lanceolate, hairy. Very common on the banks of the Wolga, flowering in April and May. *Root* annual, simple, tapering. *Stem* three inches long, erect, dichotomous, slightly branched. *Leaves* alternate, linear, broadish at the end, hairy beneath, and at the margin. *Corolla* very small, with an azure limb and white throat. *Seeds* oblong, with bristly, hooked spines.

11. *M. spinocarpus*. Thorny-seeded Scorpion-grafs. Willd. n. 11. Vahl. Symb. p. 2. 32. (*Anchusa spinocarpus*; Forsk. Defor. 41.)—*Seeds* mucronated and spinous. *Clusters* leafy; flowers remote. *Leaves* linear, hairy.—Found near Alexandria. *Stems* woody at the base, spreading, branched in a forked manner towards the top, thickly covered with darkish hairs, as is the whole plant. *Leaves* sessile, scarcely as long as the nail, rather obtuse, spreading at the top. *Flowers* small, white. *Fruit* pyramidal, mucronated all over, angular, and spinous at the base, with larger tubercles.

12. *M. pectinata*. Kamtschatka Scorpion-grafs. Ait. Hort. Kew. ed. 2. v. 1. 286. Willd. n. 12. Pall. It. v. 3. 717. t. E. f. 4.—*Seeds* bristly at the top. *Clusters* erect. *Leaves* ovato-lanceolate, villous.—Native of mossy rocks, in the coldest parts of Siberia, and in Kamtschatka. It flowers at Kew in June and July. This species, in its mode of growth, is very like *rupestris*. *Root* perennial, loosely spreading. *Stems* slender, somewhat hairy. *Leaves* alternate, sessile, ovato-lanceolate, covered with long, soft hairs. *Corolla* small, blue, with a pale throat. *Seeds* crowned with bristles, somewhat like the seed-down of syngenesious plants.

13. *M. australis*. New Holland Scorpion-grafs. Brown. Prodr. Fl. Nov. Holl. v. 1. 495.—“Hispid. *Leaves* oblong-lanceolate. *Calyx* as long as the tube, clothed with spreading, hooked bristles.” Gathered by Mr. Brown at Port Jackson, and in Van Diemen’s land. We have a specimen from the former country. The plant is eighteen inches or more in height, clothed with little, rigid bristles, of which those on the stem are deflexed. *Leaves* with a blunt, callous point. *Flowers* numerous, small, blue, in terminal, aggregate clusters, whose stalks are clothed with ascending bristles.

Mr. Brown esteems this genus as differing from *Anchusa* merely in the want of bractes. He would therefore refer to

the latter *M. spathulata* of Forster, and *rupestris* of Pallas. He conceives that the Linnæan species, which have an echinated fruit, ought to constitute a distinct genus, very near to *cynoglossum*, on account of the prickly cuts or seeds attached to the central column, compressed not depressed, and the clusters furnished with bractes. The essential character of the genus MYOSORIS is given by this ingenious author as follows. “*Calyx* deeply five-cleft. *Corolla* salver-shaped; throat closed with concave valves; limb in five, deep, obtuse segments. *Stamens* included with peltate anthers. *Stigma* capitate. *Nuts* four, distinct, umbilicated at the base.

Clusters simple, without bractes.”

*M. apula*, Linn. Sp. Pl. 189, is now referred by Willdenow, and Dr. Smith, in the *Prodromus Floræ Græcæ*, to LITHOSPERMUM.

MYOSURUS, derived from *μυοσ* *ουρα*, the tail of a mouse, a very excellent and expressive name bestowed by Dillenius on this plant, from the circumstance of its spiked receptacle, scaly with seeds, resembling a mouse’s tail.—Dill. Gen. 106. t. 4. Linn. Gen. 155. Schreb. 209. Willd. Sp. Pl. v. 1. 1568. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 348. Prodr. Fl. Græc. v. 1. 218. Ait. Hort. Kew. ed. 2. v. 2. 199. Juss. 233. Lamarck Illustr. t. 221. Gærtn. t. 74.—Class and order, *Pentandria Polygynia*. Nat. Ord. *Multiflora*, Linn. *Ranunculaceæ*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of five, almost lanceolate, obtuse, reflexed, coloured, deciduous leaves; each spurred at the base, below their insertion. *Cor.* Petals five, shorter than the calyx, very small, concave at the base, consisting of a honey-bearing, tubular claw, and a short, spreading, lanceolate border. *Stam.* Filaments five (or more), the length of the calyx; anthers oblong, erect. *Pist.* Germens superior, very numerous, covering a very long conical receptacle; styles none; stigmas simple. *Peric.* none. *Recept.* very long, columnar, imbricated with numerous, oblong, pointed seeds.

Obf. The number of stamens in this genus is extremely variable. There is also a great affinity between it and *Ranunculus*, especially between the nectariferous claw of the petals in that genus, and the tubular claw of *Myosurus*. Linnæus and other authors have considered these parts of the flower as nectaries, but we are rather inclined to regard them as petals, as they were originally described.

Ess. Ch. *Calyx* of five leaves, each with a spur at the base. Petals five, with a tubular, honey-bearing claw. *Seeds* numerous, naked.

1. *M. minimus*. Mouse-tail. Linn. Sp. Pl. 407. Engl. Bot. t. 435. Curt. Lond. fasc. 4. t. 26. (*Cauda muris*; Ger. em. 426. *Ranunculus gramineo folio, flore caudato, seminibus in capitulum spicatum congestis*; Tourn. Inst. 293.)—By no means an uncommon plant in fields about London, especially on a gravelly soil, flowering in May. It grows wild in most parts of Europe. *Root* annual, fibrous, small. *Herb* smooth, more or less luxuriant. *Stem* none. *Leaves* radical, nearly erect, linear, spatulate, rather obtuse, entire, somewhat fleshy. *Stalks* numerous, upright, simple, longer than the leaves, round, a little thicker upwards, each bearing a small, erect, pale yellowish flower. *Receptacle* awl-shaped, “covered (says Dr. Smith) with a great number (even two or three hundred) of ovate, striated germens, each furnished with its own minute sessile stigma.”—The same author observes “this affords a remarkable, and rare instance of a very great disproportion of males to females in the same flower, and yet the latter are generally all prolific. The seeds are justly described by Linnæus as naked;



naked; for the part which Jussieu denominated a capsule, is surely nothing more than a thickened inseparable coat, as in *Ranunculus*."

Mr. Curtis, in remarking the singularity of structure in the fructification of this delicate little annual, cautions the young botanist to be careful in distinguishing the corolla from the stamens.—Mr. Hudson says the leaves are occasionally hairy. Professor Martyn mentions a specimen of this plant, which grew in a good soil, and had above fifty flower-stalks of different lengths, from three to seven inches, and leaves about three inches and a half in length, but there was no trace of hairiness on them. This plant flowered in April and May, but had not shed its seeds towards the middle of June.

**MYOTOMY, MYOTOMIA**, the dissection of muscles. This name has been given to some anatomical works on the muscles: as Cowper's *myotomia reformata*.

**MYOXUS, DORMOUSE**, in *Zoology*, a genus of quadrupeds of the order Glires. The generic character is, front-teeth two, the upper ones are wedged; but the lower ones are compressed sideways, whiskers long; tail hairy; round, thick towards the tip; the feet are nearly equal in length; the fore-feet have four toes. The animals of this genus all remain torpid during winter; they walk or rather leap on their hind legs, bounding three or four feet at a time, in which they are assisted by a long stiff tail; they feed only on vegetables, burrow under ground; sleep by day, watch by night, carry food to the mouth by the fore-paws, and drink by dipping the fore-palms in water. There are four

#### Species.

**GLIS**; Fat Dormouse. Body hoary, beneath whitish. This species, the Glis of Pliny and the old naturalists, is a native of France and the south of Europe. It also occurs in Russia, Austria, &c. residing on trees, and leaping from bough to bough in the manner of a squirrel, though with a less degree of agility. It feeds on nuts, acorns, fruit, &c. and during great part of the winter remains torpid in its nest, which is prepared in the hollows of trees, with dried leaves, moss, &c. During its state of torpidity, it is said to grow very fat, contrary to the nature of most of the hibernating or sleeping animals; which are observed, on their first emerging from that state, to be far leaner than before its commencement. It is probable, however, that this animal awakes at intervals, and indulges in the use of its collected stores of provisions.

The size of this elegant species is not very far short of that of a squirrel, measuring from nose to tail near six inches, and the tail four and a half. It is an animal of a much thicker form, in proportion, than a squirrel, and is of an elegant ash-colour, white on the under parts and insides of the limbs; the tail is very villose or furry, and of a slightly spreading form, like that of a squirrel; the eyes are large and black; the ears thin, rounded, and very slightly haired. Sometimes the upper parts of the body have a slight dusky, and sometimes a ferruginous tinge. Its general manners resemble those of a squirrel, but it is not easily tamed. The young are produced about the middle of summer, and are eight to twelve in number.

**DRYAS**; Wood Dormouse. Body above tawny-grey; beneath dirty-white; a straight black line from ear to ear across the eyes. It inhabits several parts of Europe.

**NITELLA**; Garden Dormouse. Body above tawny; beneath whitish; a black circle round the eyes, and a black spot behind the ears. The garden dormouse is a native of

the temperate and warmer regions of Europe and Asia, and is commonly found in gardens, feeding on various kinds of fruit, particularly peaches and apricots. It makes its nest, like the rest of this genus, in the hollows of trees, and sometimes in those of walls, or even in the ground about the roots of trees, collecting, for this purpose, dried leaves, grass, mosses, &c. In autumn, it collects a quantity of nuts, mast, &c. and deposits it in its hole; and during the greatest part of the winter remains in a state of torpidity, awaking only at distant intervals. Its general length is about four inches and a half, and the tail rather less. It is of an elegant rufous or ferruginous colour above, and yellowish-white beneath; the eyes are imbedded in a large black patch or spot, which extends to some distance beyond each ear; the tail is somewhat wider towards the end, and sharpens at the extremity, and is marked on that part by a longitudinal black stripe, having the edges white. These animals produce their young about the middle of summer, which are about five or six in number, and are said to be of a very quick growth.

**MUSCARDINUS**; Common Dormouse. Body tawny; throat whitish; hind-thumbs without claws. The size of this animal is nearly equal to that of a mouse, but is of a more plump or rounded form, and the nose is more obtuse in proportion; the eyes are large, black, and prominent; the ears broad, thin, and semi-transparent; the fore-feet have four toes, and the hind-feet five, but the interior of these latter are destitute of nails; the tail is about two inches and a half long, and is closely covered on all sides with hair, which is rather longer towards the tip than on the other parts; the head, back, sides, belly, and tail, are of a tawny-red colour; the throat white; the fur is remarkably soft, and the whole animal has a considerable degree of elegance in its appearance. It sometimes happens that the colour is rather brown than reddish.

**MYRA**, in *Geography*, a town of Asiatic Turkey, in Natolia, on a river of the same name, which runs into the Mediterranean; 54 miles S.S.W. of Satalia.

**MYRACOPON**, a name used by some authors for an ointment intended to be used to the whole body to prevent lassitude. It is described by Galen.

**MYRCINUS**, in *Ancient Geography*, a town of Thrace, placed by Herodotus and Thucydides on the banks of the Strymon; Appian places it near Philippi; and Tzetzer says, that it was anciently called "Hedonus."

**MYRE**, a town of Asia Minor, in Lycia.

**MYREPSUS, NICHOLAS**, in *Biography*, a physician, and one of the last who wrote in Greek, was a native of Alexandria. He appears to have flourished in the thirteenth century, as his writings are quoted by other authors early in the fourteenth. The impurities of his style abundantly prove the decaying state of the Greek as a living language. A dispensatory, which he composed, became very early the rule of pharmacy throughout Europe. In Paris, in 1332, all apothecaries were ordered by parliament to have a copy of his "Antidotarium" in their possession. The Greek copies are numerous, in MS. in different libraries; but the work has been printed only in Latin translations; the best of which is that of the learned Leonart-Fuchs, entitled "Opus medicamentorum in sectiones quadraginta-octo digestum," first printed at Basle, 1549, folio, and several times reprinted. It is included in the collection of the "Medicæ Artis Principes." This work of Myrepsus is a vast farago of the compositions of the Greeks and Arabians, intermixed with much superstition, and full of obscurities. Eloy Dict. Hist. Gen. Biog.



MYRIAD, the number of ten thousand. Whence *myriarcha*, a captain or commander of ten thousand men.

MYRIANDRI, in *Ancient Geography*, a people of Syria, upon the banks of the river Amanus, according to Pomponius Mela.

MYRIANDRICUS SINUS, the same with the "Sinus Iflicus."

MYRIANDRUS, a commercial town of Syria, erected and inhabited by Phœnicians, situated in the S.E. part of the gulf called "Iflicus."

MYRIANTHUS, in *Botany*, from *μυρίος*, innumerable, and *ἄνθος*, a flower, alluding to the great number of male flowers.—Beauvois Fl. d'Oware et de Benin, 16. Willd. Sp. Pl. v. 4. 598.—Class and order, *Monœcia Monadelphia*. Nat. Ord. *Cucurbitaceæ*, Linn. Juss.

Eff. Ch. Male, Calyx in four deep concave segments. Corolla none. Filaments cylindrical, in three terminal segments. Anthers three.

Female, Cal. and Cor. . . . Berry inferior, pulpy, of twelve or fourteen cells. Seeds numerous, winged.

1. *M. arboreus*. Beauv. Ow. et Ben. 17. t. 11, 12.—Native of the kingdom of Benin, in the tropical part of Africa.—A tree as large as an apple-tree; with a white bark. Leaves alternate, stalked, fringed, resembling those of the Horse Chestnut; the leaflets six, oblong, toothed. Flowers in a corymbose panicle; the males very minute, white, in very close spikes, at the top of the divisions of the panicle. Fruit the size of a large apple. Willdenow.

What is above denominated the calyx of the male flowers, would probably have been termed corolla by Linnæus; at least if we are right in the natural order.

MYRICA, a name borrowed from the ancient Greeks, whose *μύρική* however appears, by the imperfect description in Dioscorides, and especially by what he says in the following chapter, (of *επειχή* being like it, but much smaller,) to be the Tamarisk, *Tamarix gallica*. This Pliny confirms, and all modern writers have so understood it; nor do we find, in the writings of Linnæus, any reason for his having first applied this name to the genus before us, except that he preferred it to the Dutch word *Gale*, adopted by Tournefort; see *Fl. Lapp.* ed. 2. 307.—Linn. Gen. 518. Schreb. 683. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 1076. Juss. 409. Michaux Boreali-Am. v. 2. 227. Lamarck Illust. t. 809. Gertn. t. 39.—Class and order, *Dioecia Tetrandria*. Nat. Ord. *Amentaceæ*, Linn. Juss.

Gen. Ch. Male, Cal. Catkin ovate-oblong, loosely imbricated, in every direction, with single-flowered, heart-shaped, bluntly-pointed, concave scales. Perianth none. Cor. none. Stam. Filaments four, rarely six, thread-shaped, short, erect; anthers large, of two cloven lobes.

Female, Cal. as in the male. Cor. none. Pist. Germen superior, nearly ovate; styles two, thread-shaped, longer than the calyx; stigmas simple. Peric. Berry of one cell. Seed solitary.

Eff. Ch. Male, Calyx the scale of a catkin, concave. Corolla none.

Female, Calyx the scale of a catkin, concave. Corolla none. Styles two. Berry with one seed.

Obs. *M. Gale*, the original species, has four stamens, and a dry berry, whose coriaceous crust is compressed and three-lobed at the summit.

*M. cerifera*, has mostly six stamens, and a globular juicy berry.

As to the very great affinity ("*summa affinitas*") between this genus and *Pistacia*, mentioned by Linnæus, we confess ourselves unable to perceive it, either in the habit, inflorescence, or characters of the fructification.

1. *M. Gale*. Sweet Gale, Gaule, or Dutch Candleberry Myrtle. Linn. Sp. Pl. 1453. Engl. Bot. t. 562. Fl. Dan. t. 327. (*Myrtus brabantica*, five *Eleagnus Cordi*; Ger. em. 1414.)—Leaves lanceolate, with shallow serratures. Fruit crowded. Stem shrubby.—Abundant in bogs throughout the north of Europe, especially about the bases of mountains, as well as in flat countries, where the soil is gravelly and the water clear. It is found on several wet moors in Norfolk. The catkins are fully formed in March; they expand in April, after which the leaves come forth, and in August or September the branches are laden with ripe fruit, whose scent is very agreeable, not unlike that of red cedar. This odour resides in the shining resinous particles, scattered over the berry, which easily rub off; and is very durable, even in dried specimens, though it assumes, with age, the flavour of candied citron peel. Linnæus says, the fruit is used as a substitute for hops, by poor people in the north, and that wax may be obtained from it, as from the next species, by boiling. The stem is not above three or four feet high, shrubby, bushy, forming a round head of numerous, smooth, round, darkish-red twigs. Leaves alternate, lanceolate inclining to obovate, acute, chiefly serrated towards the point, minutely downy, veiny, paler beneath, about an inch and a half long, deciduous. The young catkins are axillary formed in the course of the summer for the ensuing spring. Michaux met with this species in America, as well as the following.

2. *M. cerifera*. American Candleberry Myrtle. Linn. Sp. Pl. 143. (*Myrtus Brabanticæ similis*, carolinensis baccifera, fructu racemoso, &c.; Pluk. Phyt. t. 48. f. 9. Carexby's Carolin. v. 1. 69. t. 69; also 13. t. 13.)—Leaves elliptic-lanceolate, somewhat serrated. Stem arboreous, Berries globose.—Native of North America. Hardy in our gardens, flowering in May and June. Larger than the foregoing, with broader, more elliptical, scarcely serrated or notched leaves. The berries are much fewer, and larger, than those of our English species. Their form is globose, their pulp of a waxy nature, enclosing an oval hard nut. When dried they resemble Coriander comfits, as their waxy substance, freed from the watery particles of their pulp, then assumes the appearance of white meal. By boiling these berries, a quantity of wax is procured, which floats on the water, and serves in America to make candles, but its dirty green colour is unsightly, and its flame far less bright than even that of a good tallow candle.

3. *M. Faya*. Azorian Candleberry Myrtle. Ait. Hort. Kew. ed. 1. v. 3. 397.—Leaves elliptic-lanceolate, somewhat serrated. Male catkins compound. Female flowers distant. Fruit elliptical, coarsely granulated.—Gathered in Madeira and the Azores, by Mr. Masson, who sent it, in 1777, to Kew, where it is hardy, flowering in June and July. The leaves have a few very shallow and occasional serratures. The male catkins are said to be compound, but these we have not seen. The female ones are extremely lax, looking like very loose spikes, of a rusty hue; we are not sure that they are not compound also, though only one flower in each little partial branch comes to perfection. The fruit is twice the size of the last, and less abundant, elliptical, granulated, covered with more or less of the same waxy substance. Its seed a very hard nut, said to have four cells, but this we find not constantly the case.

4. *M. athiopica*. African Candleberry Myrtle. Linn. Mant. 298. (*Myrtus Brabanticæ accedens*, africana, baccis carens, conifera; Pluk. Phyt. t. 48. f. 8.)—Leaves lanceolate, strongly toothed, the lowermost entire. Female flowers distant. Fruit globose, coarsely granulated.—Native of the Cape of Good Hope. Akin to the two last,



but more downy, and distinguished by the strong prominent teeth of its upper *leaves*, the lower ones being entire. The *male catkins* we have not seen; the *female* ones are like rather lax spikes, simple, with a hairy stalk. *Fruit* copious, the size and shape of *M. cerifera*, very coarsely granulated, but we perceive no remains of wax on our specimen.

5. *M. Nagi*. Japan Candleberry Myrtle. Thunb. Jap. 76. Linn. Syst. Veg. ed. 14 884. (*Nageia japonica*; Gært. v. 1. 191. t. 39. f. 8. *Nā vulgō Nagi*; Kämpf. Amoen. 773. t. 874.)—Leaves lanceolate, entire, without ribs. Fruit globose, smooth.—Native of Japan, but rare. Kämpfer says it is considered as a tree of good omen, and planted in the courts of houses. The *leaves* are evergreen, firm, and veinless, like those of the *Rufcus racemosus*, or Alexandrian laurel. *Female catkins* whitish, hairy, dense. *Fruit* generally solitary, globose, dark purple, the size of a sweet-water grape, smooth, with a little insipid pulp, and one large seed whose shell is hard, but thin. Nothing is said of its yielding any wax. Though Gærtner makes a genus of this, he suggests its very near affinity to *Myrica*.

6. *M. quercifolia*. Oak-leaved Candleberry Myrtle. Linn. Sp. Pl. 1453. (*M. foliis oblongis. oppositè sinuatis*; Burm. Afr. 262. t. 98. f. 1. *Laurus africana minor*, quercifolia; Comm. Hort. v. 2. 161. t. 81.)—Leaves oblong, deeply sinuated.—Native of the Cape of Good Hope. It has been cultivated in our greenhouses for above fifty years, blossoming in May and June; but is chiefly valued for its evergreen oak-like *leaves*, which are fragrant when rubbed. The male and female *catkins* are often found on the same plant. The latter are rather short and close. *Fruit* nearly globular, coarsely granulated.

7. *M. montana*. Arabian Candleberry Myrtle. Vahl. Symb. v. 2. 99. (*Buxus dioica*; Forsk. Ægypt-Arab. 159.)—Leaves lanceolate, serrated; not dotted beneath. *Catkins* globose.—Gathered by Forskall on mount Barah in Arabia. By the description of Vahl, this is a *shrub*, with round smooth *branches*. *Leaves* an inch long, lanceolate, narrow, tapering at each end, smooth, with five or six minute, sharp, crowded serratures near the extremity. *Flowers* small, in round sessile heads, or catkins. *Calyx* of four minute lanceolate leaves. *Berry* the size of a pepper-corn; according to Forskall it is of a brownish-purple, and not eatable. The four-leaved *calyx* in this, similar to what Gærtner attributes to *M. Nagi*, is mentioned by Vahl as indicating some generic difference between these two plants, and the true *Myrica*. To this we cannot but assent, provided the descriptions be correct; and the smoothness of the *fruit* may perhaps confirm such difference.

8. *M. cordifolia*. Heart-leaved Candleberry Myrtle. Linn. Sp. Pl. 1454. (*Alaternoides ilicis folio crasso hirsuto*; Walth. Hort. 3. t. 3. *Tithymali facie planta æthiopica, ilicis aculeato folio*; Pluk. Almest. 373. Phyt. t. 319. f. 7.)—Leaves nearly heart-shaped, serrated, sessile.—Native of the Cape of Good Hope. A small bushy *shrub*, whose young *branches* are hairy, beset with numerous, alternate, small, roundish, bluntly-toothed *leaves*, thick at the edges, and curiously dotted beneath. *Male catkins* small, dense, axillary, shorter than the leaves.—*M. foliis subcordatis, integris, sessilibus*; Burm. Afr. 263. t. 98. f. 3, is cited by Linnæus as a variety. By this plate the *fruit* appears to be globose and smooth.

9. *M. trifoliata*. Three-leaved Candleberry Myrtle. Linn. Sp. Pl. 1453. Amoen. Acad. v. 6. 112.—Leaves ternate, toothed.—Native of the Cape of Good Hope. "A *shrub*, with alternate, stalked, ternate *leaves*; whose *laselets* are sessile, lanceolate, pointed, strongly toothed, downy beneath. *Fruit* in a cluster, not a spike, pulpy,

rough." Linn. This is one of those Cape plants upon which Linnæus founded his dissertation, entitled *Plantæ Africane Rariores*, published in 1760, and reprinted in the *Am. Acad.* These plants were merely shewn him by the younger Burmann, and from so transient an acquaintance with them, it is not wonderful if he made some mistakes. A *Myrica* with ternate leaves, and racemose berries, is truly paradoxical, nor have we seen any thing to confirm its existence.

MYRICA, in *Gardening*, comprehends plants of the deciduous and evergreen shrubby kinds, of which the species cultivated are sweet gale, sweet willow, or candleberry myrtle (*M. gale*); the American candleberry myrtle (*M. cerifera*); the oak-leaved candleberry myrtle (*M. quercifolia*); and the heart-leaved candleberry myrtle (*M. cordifolia*).

With regard to the first sort, it is said, that "the northern nations formerly used it instead of hops," and that "it is still in use for that purpose in some of the western isles, and a few places of the Highlands of Scotland," where it is known by the names of *sweet gale*, *goule*, *gaule*, *sweet willow*, *wild myrtle*, and *Dutch myrtle*.

*Method of Culture*.—The two first sorts may be raised from seed, and the two last by layers. The first kind requires a boggy moist situation, or to be cultivated on bog earth in such circumstances. The seeds should be procured from their native situation, and sown in pots of rich earth, in the spring, to the depth of half an inch, watering and shading them during the following summer; and on the approach of winter, placed in a warm sheltered situation, or under a common frame. When the plants have attained some growth, they should be planted out in the spring in nursery-rows, to remain till of proper size to be planted out in the pleasure-ground, where they succeed best in a soil that is not too dry.

The two last sorts are mostly raised by laying down the young shoots in the latter end of summer, or in the autumn, twisting them at a joint, and watering them well during the following summer, when the season is dry; and when they have formed good roots, which is seldom the case till the second year, they should be taken off, and planted in small pots filled with soft loamy earth, being placed under glasses in a common frame, and shaded from the mid-day sun till fully rooted, when they may be removed into a warm sheltered place during the summer, and in the autumn removed into the greenhouse, being afterwards managed as other plants of that kind.

The first sorts are likewise sometimes raised by planting the suckers of the roots in nursery rows, as above, in the autumn; and all the sorts occasionally by cuttings, though they strike root with great difficulty. In this last way the young shoots are the most proper, which should be planted in pots, and plunged in a hot-bed, covering them close with glasses.

They may be introduced, the two first in sheltered clumps and borders, and the latter sorts in collections of the greenhouse kind, where they afford fine fragrance in their leaves.

MYRINA, in *Ancient Geography*, *Paliocastro*, a town on the northern part of the island of Lemnos, W.N.W. of Hephæstia.—Also, a town of the Troade, probably the same with that referred by some geographers to the Æolide.—Also, a town of the island of Crete.—Also, a town of Thrace.

MYRINX, a word used by some to express the membrane of the tympanum in the ear.

MYRIOPHYLLUM, in *Botany*, is derived from *μυρίος*, innumerable,



innumerable, and πολλοί, a leaf. This Linnæan genus appears to be the very plant so called by Pliny, and other ancient writers. From the description of μυριοφυλλοῦ in Dioscorides, we have no doubt of its being the identical plant of that author. Millfoil.—Linn. Gen. 493. Schreb. 642. Willd. Sp. Pl. v. 4. 406. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 1021. Ait. Hort. Kew. ed. 1. v. 3. 351. Michaux. Boreal-Amer. v. 2. 190. Juss. 18. Lamarck Illustr. t. 775. Gærtn. t. 68. Vaill. Mem. Par. 1719. t. 2. f. 3. (Pentapterophyllon; Dill. Gen. 125. t. 7.)—Class and order, *Monœcia Polyandria*. Nat. Ord. *Inundate*, Linn. *Naiades*, Juss.

Gen. Ch. Male, *Cal.* Perianth superior, of four, oblong, erect leaves; the two outermost largest. *Cor.* Petals four. *Stam.* Filaments eight, capillary, longer than the calyx, flaccid; anthers oblong. Female flowers below the male, *Cal.* Perianth as in the male. *Cor.* Petals four. *Pist.* Germens four, inferior, oblong; styles none; stigmas downy. *Peric.* none. *Seeds* four, oblong, coated.

Ess. Ch. Male, Calyx of four leaves. Petals four. Stamens eight. Female, Calyx of four leaves. Petals four. Stigmas four, sessile. Seeds four, coated.

Obf. Linnæus and Schreber describe this genus as wanting a corolla; but Jussieu, on the authority of Vaillant, says, there are four petals enclosed in the calyx. Dr. Smith, on examination, found the latter authors to be correct. United flowers, with both male and female organs, are frequently observable in *M. verticillatum*, but very seldom in *spicatum*.

1. *M. spicatum*. Spiked Water-Millfoil. Linn. Sp. Pl. 1409. Engl. Bot. t. 83. Fl. Dan. t. 681.—Male flowers in interrupted naked spikes.—Native of Europe, and a common British plant, in ditches, and stagnant pools, flowering in July and August. The whole of this floating herb is immersed in water, except its spikes. *Roots* perennial, long, and slender. *Stems* cord-shaped, branched, leafy in the upper part. *Leaves* whorled in fours, spreading, very finely pectinated, smooth. *Spikes* terminal, solitary, with whorls of flowers. *Bractææ* ovate, undivided, in fours, placed under each whorl. *Calyx* acute, finely ciliated. *Petals* in the male flowers twice as long as the calyx, concave, erect, obtuse, entire, bluish-coloured or reddish. *Anthers* protruded, yellow. *Female flowers* with smaller petals and villose stigmas. *Seeds* ovate.

2. *M. verticillatum*. Verticillate Water-Millfoil. Linn. Sp. Pl. 1410. Engl. Bot. t. 218. Fl. Dan. t. 1046.—All the flowers in axillary whorls.—Native of Europe, in swampy places; but not so common in this country as the last. It flowers in July. The flowering-stems of this floating herb rise above the surface of the water, and are leafy up to their very summits. *Leaves* whorled, as in the last, but in fives, those at the upper part of the stem less finely cut than those which are immersed. *Flowers* axillary, whorled, occasionally hermaphrodite; but mostly female in the lower whorls, male in the upper. *Petals* oval, concave, green, soon falling off. *Stigmas* short, spreading, and finely tufted. The root and lower part of the stem much resemble those of *spicatum*.

3. *M. indicum*. Indian Water-Millfoil. Willd. n. 3.—Lower leaves pinnated, capillary; upper lanceolate, wedge-shaped, somewhat cut at the top. Flowers axillary, whorled.—This aquatic is a native of Ceylon and Coromandel. Stem two feet high, round, about as thick as a pigeon's quill. Lower leaves pinnated, four in a whorl; leaflets capillary; the upper ones gradually narrower; the uppermost lanceolate, either slightly toothed or entire at the tip. Flowers in whorls, at the axils of the leaves. In

habit very similar to the last. Willdenow adopted the present species on the authority of his friend Klein, who observed that its flowers were hermaphrodite, and described it as follows: "Calyx in four, ovato-lanceolate, minute segments. Corolla of four, ovate, deciduous, petals. Filaments eight, thread-shaped, the length of the corolla. Anthers linear, as long as the filaments. Germens four, forming an arch. Styles none. Capsules four, single-seeded."

4. *M. scabratum*. Rough Water-Millfoil. Michaux Boreal-Amer. v. 2. 190. Willd. n. 5.—Leaves pinnatifid. Flowers all whorled and axillary; the males with four stamens. Fruit with eight ribs, disposed in pairs.—This is a native of Carolina and Georgia, and is suspected by Michaux to be the *Potamogeton pinnatum* of Walter's *Flora Caroliniana*.

5. *M. heterophyllum*. Various-leaved Water-Millfoil. Michaux ibid. 191. Willd. n. 4.—Lower leaves pinnate, capillary; the upper floral ones oval, sharply serrated. Male flowers with six stamens.—From the same country. Supposed to be *Potamogeton verticillatum* of Walter.

MYRIOTHECA, from μυριοί, innumerable, and θηκη, a cell; Juss. 15. Poiret in Lamarck's Dict. v. 4. 403. See MARATTIA.

M. Poiret unjustly censures what he mistakes for a wilful alteration of the name. Swartz published *Marattia* in his *Prodromus* in 1788, of which Jussieu was ignorant when he called the same genus *Myriotheca*, the following year, in his *Genera Plantarum*; but most succeeding writers have properly adopted the original name, and Lamarck and Poiret ought to have done so.

There is some want of precision in the learned Jussieu's character of this genus, p. 15, and still more in his referring it, p. 447, to the *Canopteris* of Bergius. (See DAREA.) These errors possibly led M. Poiret to compare the genus in question to *Pteris*, from which it is equally unlike in character and appearance.

MYRISTICA, the Nutmeg, called *Nux myristica*, or Balsam Nut, by the old writers, from the Greek μυριστικός, balsamic.—Linn. Suppl. 40. Schreb. 711. Willd. Sp. Pl. v. 4. Mart. Mill. Dict. v. 3. Thunb. Nov. Gen. 83. Diff. de Myristica, Upsal. 1788. Brown. Prodr. Nov. Holl. v. 1. 400. Juss. 81. Lamarck Dict. v. 4. 383. Illustr. t. 832, 833. Gærtn. t. 41.—Class and order, *Diœcia Monadelphia*. Nat. Ord. *Lauri*, Juss. *Myristicææ*, Brown; see MYRISTICÆÆ.

Gen. Ch. Male, *Cal.* Perianth of one leaf, coriaceous, three-cleft; the segments ovate, acute, not folding over each other in the bud. *Cor.* none. *Stam.* Filaments completely united into a cylindrical columnar tube, shorter than the calyx; anthers from three to twelve, linear, cohering lengthwise, of two cells, bursting longitudinally externally. *Pist.* No rudiments of any.

Female, *Cal.* Perianth as in the male, deciduous. *Cor.* none. *Stam.* none. *Pist.* Germen superior, sessile, ovate; style very short; stigma slightly lobed. *Peric.* Capsule ovate, or nearly globular, thick and fleshy, of one cell and two valves. Seed solitary, large, oval, enclosed in a coriaceous, many-cleft tunic; albumen eroded internally.

Ess. Ch. Male, Calyx three-cleft. Corolla none. Anthers from three to twelve, cohering.

Female, Calyx three-cleft. Corolla none. Capsule nearly globose, fleshy, of one cell and two valves. Seed solitary, in a many-cleft tunic.

The characters of this valuable genus have but lately been made known to scientific botanists. The history of the different species, as far as they were known to him, is indeed



indeed fully given by Rumphius, but he has said nothing explanatory of the structure of their flowers. The fruit is so extraordinary, that nothing of the affinity of the genus could be conjectured from thence; nor was any information, respecting so precious an article of commerce, to be expected from the Dutch, while it was in their power to conceal the truth. This difficulty is now removed, by other nations having got access to the spice islands, and botanists are at present furnished with sufficiently good specimens, of several of the species.

As we are not yet possessed of the volume of Willdenow which contains this genus, we cannot profit by his labours. We derive, as usual, light from Mr. Brown, who is inclined to keep separate from *Myristica* two genera which have been referred to it. These are *Knema* of Loureiro, whose anthers are unconnected, spreading in the form of a star, (and which appears to be the *Myristica globularia*, Lamarck n. 4, as well as *M. microcarpa* of Willdenow;) and *Virola* of Aublet, t. 345, which Mr. Brown observed, in the original specimen of that author, to have but three anthers. (See *KNEMA* and *VIROLA*.) On the other hand, *Horsfieldia* of Willdenow, differing only in having "an obscure stigma," which, as Mr. Brown remarks, was perhaps "but obscurely seen," is reduced by him to *Myristica*.

We shall at present attempt the botanical history of the two species which we have seen, and which we have not as yet found clearly defined, subjoining slighter mention of some others.

1. *M. officinalis*. True Nutmeg. Linn. Suppl. 265. Gært. v. 1. 194. t. 41. f. 1. (*M. moschata*; Thunb. Diff. 3. Woodv. Med. Bot. t. 134. *M. aromatica*; Lamarck n. 1. Swartz Obs. 217. Mart. n. 1. *Nux myristica*; Rumph. Amboin. v. 2. 14. t. 4. *Nux moschata*, fructu rotundo; Bauh. Pin. 407. Pluk. Phyt. t. 209 f. 1.)—Leaves elliptic-lanceolate. Flower-stalks smooth, twice the length of the calyx.—Native of the remote parts of the East Indies. Cultivated in Amboyna and Banda, from which last island perfect specimens were sent us, by the late Mr. Christopher Smith, in 1797. This tree is compared by Rumphius to a common pear-tree, with respect to size and appearance. The branches are alternate, long, slender, round, and smooth. Leaves alternate, three or four inches long, elliptic-lanceolate, pointed, entire, with one rib, and numerous, transverse, curved, not much crowded, veins; smooth on both sides; shining above; whitish and opaque beneath. Footstalks full half an inch long, slender, smooth. Stipules none. Flower-stalks axillary, solitary, simple or branched, longer than the footstalks, angular, smooth. Flowers smooth, white, not unlike those of lily of the valley, but smaller, three-cleft, and without scent, each accompanied by a lateral rounded bractea. Fruit as big as a nectarine.—Every part of the plant is more or less aromatic. The high flavour of the seed, the nutmeg, and that of its mace, are sufficiently well known. The whole fruit, candied with sugar, is esteemed a delicacy; but some persons find in it too much of a turpentine taste to be agreeable. Like that substance, and candied orange-peel, a very small portion of it swallowed, gives a violet-like scent to the urine.

Among the variety of specific names, we have selected the oldest and least exceptionable.

Thy synonym of Rumphius, cited by Linnæus, belongs to the next, and that of Sonnerat involves much confusion.

2. *M. tomentosa*. Long Nutmeg. Thunb. Diff. 4. (*M. philippensis*; Lamarck n. 2? *Nux myristica* mas;

Rumph. Amboin. v. 2. 24. t. 5. Clus Exot. 14.)—Leaves oblong, with numerous simple parallel veins. Flower-stalks aggregate, scarcely the length of the calyx, downy, like the calyx and fruit. In Banda, Amboyna, and New Guinea, flowering in May. Mr. C. Smith sent it, under the name of New Guinea Nutmeg, or Long Nutmeg, from Banda in 1797. The branches and footstalks are very much thicker than in the foregoing. Leaves four times as large, often a foot in length, and three or four inches broad, oblong or somewhat obovate; soft and scarcely visibly downy beneath; their veins much more copious, straight and parallel. Flower-stalks in little dense axillary tufts, about a quarter of an inch long, and very thick. Calyx nearly globular, somewhat longer. Both these parts are densely clothed with fine silky pubescence, of a rich golden brown in the dried specimen. The fruit also is described as downy, but this we have not seen. The seeds are of a much longer form and proportion than the first species, and are sometimes fold in the shops, by the name of Long Nutmegs, though generally reckoned inferior in quality to the former.

Rumphius figures and describes three or four more species or varieties of these plants, of which nothing is certainly known to us.

3. *M. dactyloides*. Malabar Nutmeg. Gært. v. 1. 195. t. 41. f. 2. (*M. malabarica*; Lamarck n. 3. *M. fructu inodoro*; Linn. Zeyl. 229. Panam-pa-ka; Rheede Hort. Malab. v. 4. 9. t. 5.)—Leaves oblong, with numerous simple parallel veins. Flower-stalks aggregate, longer than the calyx. Fruit oblong, downy.—Rheede describes this as common every where in the woods of Malabar, bearing fruit twice a year, in June and December. Lamarck well observes that it seems very near our second species, but, if the details in the Hortus Malabaricus be faithful, must be distinct. One circumstance in the figure is striking enough, the paniced flowers; but the description does not confirm it, and we suspect some mistake; otherwise that character would be decisive. The fruit and seed appear much like the preceding, but the latter has scarcely any taste or smell, though the mace is not without some flavour. Rheede says "the Turkish and Jewish merchants," (as if they were the only cheats in India,) mix these nutmegs with the true long ones, and the mace with good mace, selling them together. They also extract from these inferior articles, an oil, with which they adulterate that of a more genuine quality."

4. *M. cimicifera*. Bug Nutmeg. Brown n. 1.—"Leaves ovate-oblong; obtuse at the base; smooth beneath when full-grown. Flowers nearly sessile, in axillary tufts. Anthers fix."—Gathered by sir Joseph Banks, in the tropical part of New Holland. Brown.

The author last quoted describes a second New Holland species, by the name of *M. infipida*; but this he himself suspects to be a *Knema*. Gærtner has a *M. Irya*, f. 3, whose seed is globular, and a *M. Iryghedbi*, f. 4, more like the Long Nutmeg; but these, as well as some species of Lamarck, we are obliged to pass over, for want of more sufficient materials to fix their specific characters.

*MYRISTICA Moschata*. See NUTMEG.

*MYRISTICÆÆ*, a natural order of plants, first established as such by Mr. R. Brown, *Prodr. Nov. Holl.* v. 1. 399, and named from its principal genus, *Myristica*; see *MYRISTICA*. The characters are as follows.

Flowers dioecious, (without any rudiments in each of the other sex.)

Perianth of one leaf, three-cleft, the segments meeting by their edges in the bud, not overlapping each other.

Male. Filaments closely united into a column. Anthers from



from three to twelve (definite in number), either cohering or distinct, of two cells, bursting longitudinally at the back, or outer side.

Female. *Perianth* deciduous. *Germen* superior, distinct, sessile, of one feed, the rudiments of which are erect. *Style* very short. *Stigma* somewhat lobed.

*Berry*? capsular, bivalve. (We esteem it rather a coriaceous or fleshy capsule.)

*Seed* hardish like a nut; invested with a tunic which is cloven into many deep segments. *Albumen* eroded (as it were) internally, of a firm sebaceous texture.

*Embryo* small; cotyledons leafy; *radicle* inferior; *plumula* conspicuous.

This order consists of tropical trees, often exuding a reddish juice. *Leaves* alternate, without stipulas, stalked, entire, coriaceous: when full grown often clothed beneath with minute close-pressed down; their surface not dotted. *Inflorescence* either axillary or terminal, racemose, tufted, or panicled, each flower accompanied by a small short hooded bractea. *Perianth* coriaceous, smooth within, in many instances downy externally, the pubescence sometimes stellated.

Mr. Brown remarks that this order is properly not nearly akin to any other. The anthers appear to be always definite in number, either as many as the segments of the perianth, or twice, thrice, or four times that number. Their true nature is best seen in *Knema*, where they are separate, for which reason Mr. Brown is disposed to keep that genus distinct.

MYRLEA, in *Ancient Geography*. See APAMEA.

MYRMECIA, μυρμηκία, in *Medicine*, from μυρμηξ, the ant, has been used as the denomination of a species of verruca or wart, which is sessile, upon a broad base, prominent, callous, and of a blackish colour, and is affected with stinging pains, when cut, like the bitings of ants. See Forest. Observ. Med. Lib. xxiii. Obs. 9. Castelli Lexicon Med. sub voce *Formica*.

MYRMECIA, in *Botany*, derived from μυρμηκία, an ant's nest. We learn from Aublet that the natives of the Caribbee Islands call this plant *Tachi*, which signifies an ant's nest, because these insects are frequently to be found in the cavities of its trunk and branches. Hence Schreber took occasion to apply a classical name to the genus. Schreb. 74. Willd. Sp. Pl. v. 1. 623. Mart. Mill. Dict. v. 3. (Tachia; Aubl. Guian. v. 1. 75. Juss. 142. Lamarck Illustr. t. 80.)—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Gentiane*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, long, cloven into five, erect, acute teeth. *Cor.* of one petal; tube long; throat inflated; limb cloven into five, ovate, acute, revolute segments. *Nectary* composed of five, small glands, surrounding the base of the germen. *Stam.* Filaments four, thread-shaped, inserted at the bottom of the tube, and longer than it; anthers linear, erect. *Pist.* Germen superior, oblong; style thread-shaped, longer than the stamens; stigma composed of two, little plates. *Peric.* Capsule long, of two cells and two valves, invested with the permanent calyx. *Seeds* numerous, very small, viscid, adhering to the partition.

Eff. Ch. Calyx bell-shaped, five-toothed. Corolla tubular, with an inflated throat. Glands five, surrounding the base of the germen. Capsule of two cells, and two valves, many-seeded.

1. *M. scandens*. Willd. (*Tachia guyanensis*; Aubl. Guian. t. 29.)—Native of Guiana; in woods and on the banks of rivers, where it flowered, and bore fruit, in Oc-

tober. This shrub rises to the height of five or six feet. Trunk climbing, and much branched. Branches opposite, long and trailing, knobbed and quadrangular. Leaves opposite, on short stalks, ovate, acute, entire, smooth. Flowers axillary, solitary, opposite, of a yellow colour in every part. A drop of yellow and transparent resin is usually found at the axils of the leaves, where flowers are wanting.

MYRMECIAS LAPIS, the Wart-Stone, in *Natural History*, a name given by some authors to a stone covered on the surface with wart-like excrescences: it is a name of a very vague signification, some of the stones called by it being mere flints, and others owing their protuberances to coralloid bodies, the wires of asteria, or other of the extraneous fossils contained in them, and so lodged, that their ends just stand out.

MYRMECION, in *Ancient Geography*, a town of the Tauric Chersonesus, on the banks of the Cimmerian Bosphorus, according to Strabo, Pliay, Mela, &c. No vestiges of it now remain.

MYRMECITES, in *Natural History*, a name given by some authors to a small stone, with some imaginary resemblance of an ant in its shape. Others have also made it the name of such pieces of amber as contain an ant; or the legs, wings, or other fragment or remains of that little animal.

MYRMECOPHAGA, ANT-EATER, in *Zoology*, a genus of quadrupeds of the order Bruta. The generic character is, teeth none; tongue cylindric, extensile; mouth lengthened into a somewhat tubular form; body covered with hair. The animals of this genus live entirely on insects, more particularly on the various kinds of ants: in order to obtain which, they extend their tongue, which is of a very great length, and of a roundish or worm-like form, into the nests of these insects; and when, by means of the viscid moisture with which it is covered, a sufficient number are secured, they retract it suddenly into the mouth, and swallow them. A part of the generic character of the myrmecophaga is the total want of teeth, in which particularity it resembles no other animals, except those of the genus manis, in which the same circumstance takes place. There are, however, in the ant-eaters, according to the observations of Broussonet, certain bones or processes, not unlike teeth, situated deep at the entrance of the gullet or œsophagus, or rather, according to Camper, at the lower end of the jaws. The species of ant-eaters are seven in number.

#### Species.

DIDACTYLA; Little Ant-eater. Two toes on the fore-feet, four on the hind, and a bushy tail. This is an animal of great elegance. It is not superior in size to a squirrel; measuring little more than seven inches from the nose to the tail, which is longer than the body and head; the head is small; the snout sharpened, and slightly bent downwards; the legs are short; the fore-feet have only two claws on each, the exterior one much larger and stronger than the interior; on each of the hind-feet are four claws of moderate size; the ears are small, and hidden in the fur; the eyes are also small. The whole animal is covered with a beautiful, soft, and somewhat crisped or curled fur, of a pale yellow colour, or rather yellow-brown; the tail, which is very thick at the beginning or base, gradually tapers to the tip; and the lower surface, for about the space of four inches from the tip, is bare; the tail in this species being prehensile, and the animal commonly residing on trees, and preying



preying on ants, by means of its long tongue, in the manner of other species. It is a native of Guiana; walks slowly on its heels; feeds only in the night, and emits no cry.

**TRIDACTYLA.** Three toes on the fore-feet, and four on the hind; the tail is bushy. It is found in divers parts of India; travels slowly; climbs trees, and defends itself against the attacks of flies by its broad tail.

**JUBATA; Great Ant-eater.** Four toes on the fore-feet, and on the hind five; the tail is bushy. There is a variety with a shorter face and shorter legs. This, as its name imports, is by much the largest of the genus, being seven feet in length from the tip of the nose to the end of the tail; but if measured to the origin of the tail, it is no more than about five feet and a half. It is an animal of an uncouth appearance; the head is small; the snout very long; the eyes small; the ears short and round; the shoulders thick and muscular, from whence the body tapers towards the tail; but the thighs are thick and stout. The colour of the animal is a deep grey, with a very broad band of black running from the neck downwards, on each side of the body, growing gradually narrower as it passes down. This black band is accompanied on the upper part by a streak of white; the fore-legs are of a lighter cast than the hinder, and have a patch or spot of black in front, not much above the foot; the tail is black, extremely long, and bushy; the hair on the whole body, but especially on the tail, is very harsh and coarse; the two middle claws of the fore-feet are extremely large and strong, which render this creature, though destitute of teeth, a very formidable adversary; since it has been known to destroy animals of much greater apparent strength than itself, fixing its claws upon them, and exerting such powerful strength as to kill them by continued laceration and pressure. It is a native of Brasil and Guiana. It is chiefly a nocturnal animal, and is said to sleep during the greatest part of the day in retired places. Its pace is somewhat slow, and its manners dull and heavy. It is said to swim with ease, at which time it flings its tail over its back. A living specimen was some years ago brought into Spain, and kept in the royal menagerie at Madrid. In this state of confinement, it would readily eat raw meat cut small, and was said to swallow four or five pounds in a day. Its length was six feet from the nose to the end of the tail, and its height was two feet.

**TETRADACTYLA.** Four toes on the fore-feet, and on the hind-feet there are five; the tail is naked. It inhabits South America; wanders only in the night, sleeps by day; when angry, it seizes a stick, and fights sitting on its hind-legs. The tail of this animal is bald at the extremity, by which it is able to suspend itself from the branches of trees. It has a black stripe on the breast and side.

**PENTADACTYLA; Striped Ant-eater.** Five toes on the fore-feet; the tail is long, flat, and entirely covered with hair. It is about thirteen inches long, and ten high.

**CAPENSIS; Cape Ant-eater.** Four toes on the fore-feet; the snout is long; the ears are large and pendulous; the tail is shorter than the body, and tapering to the tip. It is found at the Cape of Good Hope; is larger than the other species, and nearly of the size of a hog, weighing about an hundred pounds. It burrows in the ground, sleeps by day, and prowls by night.

**ACULEATA; Aculeated or Porcupine Ant-eater.** Body covered with long sharp spines; tail short. The aculeated ant-eater is one of those curious animals which have been lately discovered in New Holland, and is a striking instance of that beautiful gradation, so frequently observed in the animal kingdom, by which creatures of one tribe or genus

approach to those of a very different one. It forms a connecting link between the very distant Linnæan genera of *hystrix* (porcupine) and *myrmecophaga* (ant-eater), having the external coating and general appearance of the one, with the mouth and peculiar generic characters of the other. This animal, so far as may be judged from the specimens hitherto imported, is about a foot in length. In its mode of life it resembles the rest of the ant-eaters, being generally found in the midst of some large ant-hill. It burrows with great strength and celerity under ground, when disturbed; its feet and legs being strong and short, and wonderfully adapted to the purpose. It will even burrow under a pretty strong pavement, removing the stones with its claws; or under the bottom of a wall. During these exertions, its body is strengthened or lengthened to an uncommon degree, and appears very different from the short or plump aspect which it bears in its undisturbed state.

**MYRMELEON, LION-ANT,** in *Entomology*, a genus of insects of the order Neuroptera. The generic character is, mouth furnished with jaws; teeth two; feelers four, elongated; stemmata none; antennæ elevated, of the length of the thorax; wings deflected; tail of the male furnished with a forceps, consisting of two straightish filaments. This genus includes sixteen species, separated into two divisions.

*A. Hind-feelers longer; jaw one-toothed; lip membranaceous, square, truncate, emarginate.*

Species.

**LIBELLULOIDES.** Wings grey, spotted with brown; body spotted with black and yellow. It inhabits the Cape of Good Hope.

**PARDALIS.** Wings white, with scattered black dots; thighs yellow. It inhabits Coromandel. A specimen is preserved in the museum of sir Joseph Banks.

**PANTHERINUS.** Wings white, spotted with black; body yellow; abdomen variegated with black. This species is found in Austria, and other parts of Germany.

**LYNCEUS.** Wings hyaline, with a black marginal spot at the tip, in the middle of which is a snowy one. It inhabits Sierra Leona.

**FORMICALEO.** Wings clouded with brown, with a white marginal spot. This species is better understood than any other of the genus myrmeleon. Its larva has been long celebrated for its ingenuity in preparing a pit-fall, for the destruction of such insects as happen unwarily to enter it. The myrmeleon formicaleo, in its complete or fly state, bears no inconsiderable resemblance to a small dragon-fly; from which, however, it may readily be distinguished by its antennæ. It is of a predacious nature, flying chiefly by night, and pursuing the smaller insects in the manner of a libellula. It deposits its eggs in dry sandy situations; and the young larvæ, when hatched, begin to exercise their talent of preparing, by turning themselves rapidly round, a very small conical cavity in the sand. Under the centre of the cavity the little animal conceals itself, suddenly rushing forth at intervals, to seize any small insect which, by approaching the edge of the cavity, has been so unfortunate as to fall in; and, after sucking out its juices, throws it, by a sudden exertion, to some distance from the cavity. As the creature increases in size, it enlarges the cavity, which at length becomes about two inches, or more, in diameter. The larva, when full grown, is more than half an inch long, and is of a flattened figure, broad towards the upper part, and gradually tapering to an obtuse point at the extremity.



It is brown, and beset with numerous tufts of dusky hair, which are particularly conspicuous on each side the annuli of the abdomen; the legs are slender; the head and thorax rather small; the tubular jaws long, curved, serrated internally, and very sharp pointed. The whole animal is of an unpleasing aspect, and, on a cursory view, bears a general resemblance to a flat-bodied spider. When magnified, its appearance is highly uncouth.

Reaumur and Roëfel have given accurate descriptions of this larva, and its extraordinary history. It is one of those whose term of life, like that of the libellulæ and ephemeræ, is protracted to a considerable space, since it survives the first winter in its larva state, taking no nourishment during that time, and in the spring resumes its usual manner of preying. In preparing its pit, it begins by tracing an exterior circle of the intended diameter of the cavity, continuing its motion in a spiral line, till it gets to the centre; thus marking, as it were, several volutes in the sand, resembling the impression of a large snail-shell; and after having sufficiently deepened the cavity, it smooths the sides into a regular shape, by throwing out the superfluous sand lying on the ridges: this it does by closing its forceps in such a manner, that, together with the head, they form a convenient shovel, with which it throws the sand with so strong a motion out of the cavity, that the grains often fall to the distance of near a foot beyond the brink. The depth of the pit is generally equal to the diameter. When full grown, and ready to change into a chrysalis, the animal envelops itself in a round ball of sand, agglutinated and connected by very fine silk, which it draws from a tubular process at the extremity of the body: with this silk it also lines the internal surface of the ball, which, if opened, appears coated by a fine pearl-coloured silken tissue. It continues in the state of chrysalis about four weeks, and then gives birth to the complete insect.

**CATTA.** Wings hyaline, with faint brown spots; the nerves are spotted with black. Found in Madeira.

**PUNCTATUS.** Wings hyaline; the nerves with alternate black and white dots. It inhabits India. A specimen is in the museum of sir Joseph Banks.

**FORMICALYNX.** Wings immaculate; body brown. It inhabits Africa and America.

**TIGRINUS.** Wings hyaline, immaculate; body brown; margin of the thorax and legs yellow. It inhabits New Holland.

**CANINUS.** Wings hyaline, immaculate; body brown; head and thorax spotted with yellow. It is found in Guinea.

*B. Feelers nearly equal; jaw ciliate; lip horny, rounded, entire.*

#### Species.

**BARBARUS.** Wings reticulate, yellowish-hyaline, with two brown spots. It inhabits Europe and Africa.

**LONGICORNIS.** Upper wings hyaline, with a double yellow spot at the base; lower ones yellow, black at the base. It inhabits Italy.

**CAPENSIS.** Wings white, reticulate with black; the tail is forked. It inhabits the Cape of Good Hope.

**APPENDICULATUS.** Wings white, immaculate, one-toothed at the base. Its country is not known. There is a specimen in the British Museum.

**AUSTRALIS.** Wings white, with a black marginal spot; the body is variegated. It inhabits the southern parts of Europe.

**CAYENNENSIS.** Wings white, with a snowy marginal spot. It inhabits Cayenne.

**MYRMENA,** in *Ancient Geography*, a town supposed to have been in Ethiopia, inhabited by Anthropophagi; whose prince, according to Nicephorus, was converted by St. Matthew to the Christian faith.

**MYRMEX,** an island of Africa, on the coast of Cyrenaica. Ptolemy.

**MYRMIDONS, MYRMIDONES,** in *Antiquity*, a people of Thessaly, fabled to have arisen from ants, or pismires, upon a prayer put up for that purpose by king Æacus, to Jupiter, after his kingdom had been dispeopled by a severe pestilence. This fable is founded merely upon the equivocation of the name of the Myrmidons, which resembles that of the pismire, called in Greek *Myrmex*. These people bore a further resemblance to these little animals, inasmuch that instead of inhabiting towns or villages, they commonly remained in the open fields, having no other retreat but the dens and cavities of trees. Æacus brought them together, and settled them in habitations more secure and commodious. In Homer and Virgil the Myrmidons are Achilles's soldiers.

**MYRMILLO,** among the Romans, a kind of Gallic armour used in theatrical shows: but some will have it to be the same that Achilles's Myrmidons wore; whence it had this name.

**MYRMILLONES,** a kind of gladiators in ancient Rome, called also *murmiliones*; supposed by Lipsius to be an order that fought completely armed. Some have inferred from a passage in Festus, that they were thus called from their being armed, like the Gauls, with a long sword and buckler, and a helmet, the crest of which was usually a fish. See **GLADIATOR**.

Turnebus derives the name from the Myrmidons.

**MYROBALANS, MYROBALANI,** in the *Materia Medica*, a kind of medicinal fruit, brought from the Indies, much more used in the Arabic than the Greek pharmacy, and more among the ancients than the moderns, and still more abroad than in England.

The word comes from the Greek *μυρον*, *medicament*, and *βελανος*, *acorn*, as being somewhat in form of acorns, and used in medicine.

It is very evident from the writings of the ancient Greeks, that what we at this time call the myrobalan was not known to them under that name, and perhaps what they called so is not known to us at this time; our myrobalans being a sort of plums, and their's being a dry fruit, rather of the nut-kind, and used in perfumed unguents, and other compositions of that kind to give them a scent. This variation from the original sense of the word is not new; however; and the authors who began it are so far back, that it seems to have been an error of as old a date as any of this kind.

There are five sorts of myrobalans, or *purging Indian plums*: the first, called *citrini*, of a yellowish-red, hard, oblong, and the size of an olive. The second, called *black* or *Indian myrobalans*, of the bigness of an acorn, wrinkled, without stone. The third, *chebulic myrobalans*, the size of a date, of a yellowish-brown, pointed at the end. The fourth, *emblicic*, round, rough, the size of a gall, of a dark brown. The last, called *bellericic*, hard, yellow, round, the size of an ordinary prune, less angular than the rest.

All the myrobalans have an unpleasing, bitterish, austere, taste; and strike an inky blackness with solution of chalybeate vitriol: they are said to have a gently purgative, as well as an astringent and corroborating virtue; and are directed



rected to be given in substance from half a dram to four drams, and in infusion or slight decoction from four to twelve drams; but they have long been discarded from practice in this country.

**MYROBALANUS**, in *Botany*, from *μυρον*, *balsam*, and *βαλανος*, *an acorn*, or some similar fruit; a genus founded by Gærtner, upon three or four different dried plums, which go under the above name, and are now among the most obsolete rubbish of the apothecaries' shops. Their flowers are unknown, but from what little can be made out of the history of the plants, they have always been taken for species of *Terminalia*. Nor does Gærtner himself much invalidate this opinion. He gives the character as follows.

Eff. Ch. Flower . . . . . Drupa pulpy, its coat with rounded angles and furrowed, of one cell. Seed almond-like, inverted, with leafy, spirally convolute, cotyledons.

The species he enumerates are

*M. bellirica*. Gærtn. v. 2. 90. t. 97. f. 2. (Tani; Rheede Hort. Mal. v. 4. 23. t. 10.)

*M. Chebula*. f. 2.

*M. citrina*. f. 3.

The two last he suspects may be varieties of one species. *M. indica* of the shops, he believes to be nothing else than unripe *citrina*, before the seed is formed.

The same author adds, "if we consider the spiral convolution of the cotyledons as the essential character of *Terminalia*, according to the opinion of the late Koenig, *Badamia*," (a preceding genus figured by him in the same plate,) "as well as all the species of *Myrobalanus*, ought to be referred to that genus."

**MYROBATINDUM**, so called by Vaillant, from *μυρον*, *a fragrant balsam*, *βολον*, *a thorn or bramble*, and *indum*, *Indian*; a synonym of some prickly species of *LANTANA*. See that article.

**MYRODENDRUM**, so named by Schreber, from *μυρον*, *a balsam*, or *fragrant ointment*, and *δενδρον*, *a tree*, because it is celebrated in Guiana for abounding with a red, resinous secretion in its trunk and branches, of the sweet flavour of *storax*. This juice, after exudation, becomes a reddish, transparent resin, which is used by the natives for fumigations, and is also successfully applied, according to Aublet, as a vulnerary, like the Balsam of Peru. Schreb. 358. Willd. Sp. Pl. v. 2. 1171. Mart. Mill. Dict. v. 3. (Houmieri; Aubl. Guian. v. 1. 564. Houmيريا; Juss. 435. Lamarck Illustr. t. 462.)—Class and order, *Polyandria Monogynia*. Nat. Ord. uncertain.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, with five, sharp teeth. *Cor.* Petals five, oblong, acute, spreading, much larger than the calyx. *Stam.* Filaments twenty, capillary, inserted into the receptacle; anthers roundish. *Pist.* Germen superior, roundish, small; style long, incurved, villose; stigma capitate, five-lobed. *Peric.* Capsule of five cells. *Seeds* solitary.

Eff. Ch. Calyx five-toothed. Petals five. Stigma five-lobed. Capsule with five, single-seeded cells.

1. *M. balsamiferum*. Linn. Syst. ed. Gmel. v. 2. 817. (*M. amplexicaule*; Willd. Houmieri balsamifera; Aubl. Guian. t. 225.)—Native of woods in Cayenne and Guiana, where it flowers in April. This tree, which is fifty or sixty feet in height, is called *Touri* and also *Houmieri*, by the Caribbees. Its trunk is about two feet in diameter. Branches chiefly towards the top, long, and widely spreading. Leaves alternate, nearly sessile, ovate, or ovato-oblong, smooth, entire, reddish when young. Flowers corymbose, axillary

and terminal, white, furnished with a scale at the base of each stalk.

The negroes cut slips of the bark to use as a sort of torch, and its wood is employed by the natives for building houses, especially for roofs.

Aublet's figure represents the leaves clasping the stem, which is hardly the case in his own specimen, nor in a more perfect one for which we are obliged to Mr. Rudge.

**MYRODIA**, so named by Professor Swartz, at the suggestion of the late Mr. Dryander, from *μυρον*, *a fragrant balsam*, and *εζω*, *to smell*; alluding to the powerful and delicious scent of the whole plant, even after it has long been dried, which resembles that of melilot ointment. Swartz. Prodr. 102. Ind. Occ. v. 2. 1225. Schreb. 472. Willd. Sp. Pl. v. 3. 843. Mart. Mill. Dict. v. 3. (*Quararibea*; Aubl. Guian. 691. Juss. 274. Cavan. Diss. 175. Poir. in Lam. Dict. v. 6. 22. Lamarck Illustr. t. 571.)—Class and order, *Monadelphia Polyandria*. Nat. Ord. "*Malvaceae*, or rather perhaps *Meliaceae*," Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, tubular, coriaceous, tearing irregularly at the margin, without any uniform teeth, permanent. *Cor.* Petals five, inserted into the receptacle, oblong, oblique, obtuse, recurved and spreading, tapering at the base, longer than the calyx. *Stam.* Filaments united into a long slender tube, sheathing the style, dilated and plaited at the summit, with five teeth; anthers numerous, kidney-shaped, sessile, crowded about the top of the tube. *Pist.* Germen superior, ovate; style thread-shaped, furrowed, swelling at the top, rather longer than the stamens; stigma large, capitate, somewhat peltate. *Peric.* Drupa nearly globose, dry and fibrous, abrupt and crowned with the base of the style, of two or three cells. *Seeds* solitary, angular at one side, convex at the other.

Eff. Ch. Calyx simple, tubular, splitting irregularly. Petals five. Style thread-shaped. Drupa dry, of two or three cells. *Seeds* solitary.

1. *M. turbinata*. Swartz. Ind. Occ. v. 2. 1227. fig. a, c—f. Willd. n. 1.—Leaves elliptical. Calyx turbinate, half the length of the stamens.—Native of the Caribbee islands, Montserrat, St. Kit's, and St. Lucia, on the banks of rivers and torrents. The French call it *Bois Anglois*, or English tree. The height of this tree is from thirty to fifty feet. Branches round, with a brown smooth bark. Leaves alternate, on short thick stalks, elliptical, pointed, entire, from four inches to a foot long, and nearly half as broad, pliable, bright green, smooth, with one rib, and several transverse curved veins, whose innumerable branches are finely reticulated. Stipules opposite, at the base of the footstalks, awl-shaped, deciduous. Flower-stalks axillary, solitary, scarcely so long as the footstalks, simple, single-flowered, bearing numerous, imbricated, awl-shaped bracteas on their lower part. Calyx about half an inch long, green, besprinkled externally with very minute, reddish, glandular, resinous dots, and silky within; its mouth covered, before it expands, with an orbicular deciduous lid. Petals whitish, about twice as long as the calyx, finely downy at the back. Stamens about the length of the petals; their tube slightly curved; the anthers about twenty, all crowded together into a globular head at the top, each oval, with a longitudinal furrow. Fruit the size of a large cherry, of a dry fibrous texture, and scarcely perfecting more than one seed. The Melilot scent is very powerful in our specimen, though it has been dried above thirty years.

2. *M. longiflora*. Swartz. Ind. Occ. v. 2. 1229. fig. b. Willd. n. 2. (*Quararibea guianensis*; Aubl. Guian. 692. t. 278. Cavan. Diss. 175. t. 71. f. 2.)—Leaves oblong. Calyx



Calyx cylindrical, one-third the length of the stamens.—Gathered by Aublet, on the banks of fresh-water rivers in Guiana, bearing flowers and fruit in May. That botanist describes it as a *shrub*, only eight or ten feet high; its *trunk* three or four inches, at most, in diameter; *wood* white and soft; the *bark* grey and cracked, filamentous, and capable of serving for cordage. This last circumstance perhaps induced Jussieu the more readily to range the genus under *Malvaceæ*. The *branches* are long, flexible, straight, and subdivided. *Leaves* alternate, smooth, green, pliable, elliptic-oblong, pointed, entire; the largest nine inches long, and three broad. *Footstalks* short and thick, with a pair of *stipules*, that soon fall off. *Flowers* axillary; their *stalks* sometimes inserted into that of the leaf, two, three, four, or five together, roughish or glandular. *Calyx* rough, cylindrical, without any lid (as far as we can perceive), an inch and half long, opening with three, four, or five teeth, or sometimes splitting down at one side. *Petals* white, wavy, recurved, above twice the length of the calyx. Tube of the *stamens* thrice as long as the calyx, curved, white, slender; *anthers* about nine, yellow, accompanied by four or five green glandular bodies, many more of which are dispersed a little way down the tube. *Stigma* prominent, divided. *Fruit* dry, green, coriaceous, an inch and half long, with two seeds. The parts are all somewhat diminished in Aublet's plate. He says nothing of the scent, which Swartz describes, and we perceive, in this as well as the former. The want of a lid to the calyx, if constant, is a remarkable difference between this species and the other.

MYROPOLIS, in *Ancient Geography*, a town of Greece, near the straits of Thermopylæ, over-against Heraclea.

MYROSMA, in *Botany*, from *μυρον*, a fragrant balsam, and *σμη*, a scent, alluding to a property of the plant, rather supposed perhaps from its natural affinities, than perceptible in the dried specimen, or discoverable in any thing we can find of its history. Linnæus at first wrote it *Myrisma*, from *μυρισμα*, anointed with balsam, or unguent.—Linn. Suppl. 8. Schreb. 4. Willd. Sp. Pl. v. 1. 13. Mart. Mill. Dict. v. 3. Roscoe Tr. of Linnæan Soc. v. 8. 341. t. 20. f. 4. Juss. 63.—Class and order, *Monandria Monogynia*. Nat. Ord. *Scitamineæ*, Linn. *Cannæ*, Juss.

Gen. Ch. *Cal.* Perianth superior, of three equal, oblong, channelled, entire, membranous leaves. *Cor.* of one petal: tube very short: outer limb in three deep, equal, oblong, spreading, entire segments, each with a dark spot at the top; inner in five deep unequal segments, the two uppermost shortest, oblong, unequally emarginate, the three lowermost longest, three-cleft at the summit, cut, the middle one shorter than the other two. *Stam.* Filament one, either quite unconnected, or attached to the edge of the central segment of the lower lip, awl-shaped, membranous at the base; anther terminal, erect, ovate, compressed. *Pist.* Germen inferior, triangular; style thick, short, depressed, triangular, longitudinally split, partly hairy; stigma gaping, with a dilated lip. *Peric.* Capsule triangular, of three cells and three valves. *Seeds* several, angular.

Eff. Ch. Anther simple. Style thick, depressed, cloven longitudinally, short. Stigma gaping. Capsule triangular, of three cells, with many seeds.

1. *M. cannesolia*. Linn. Suppl. 80.; excluding the synonym. (*Myrisma* 120. nova; Linn. Pl. Surin. 5. Amœn. Acad. v. 8. 251.)—Gathered by Dalberg in Surinam. The root is creeping, with long hairy fibres, and invested with broad sheathing scales. It appears to be perennial. *Stem* herbaceous rather than shrubby, clothed in the upper part with fine deflexed hairs. *Radical leaves* several, ovate, acute, entire, three or four inches long, smooth, with

one rib, and numerous, fine, oblique, transverse veins, as in the rest of this natural order. *Footstalks* erect, broad, sheathing, striated, three inches long, suddenly contracted at the top into a hairy knob, close to the leaf. At the summit of the *stem*, of whose height we are unable to judge, is a larger leaf, from within whose much shorter sheathing *footstalk* springs the *flower-stalk*, of the same length, bearing a simple drooping spike, of eight or ten flowers, whose broad pale imbricated *bractææ* resemble the catkin of the Hop. Each of these is about as long as its corresponding flower, and is accompanied by a smaller and narrower internal *bractæa*. The *corolla* seems to be white or yellowish.

This was one of the plants which made a part of the Surinam collection, preserved in spirits, presented to Linnæus by king Gustavus III. Nothing is recorded of the properties or uses of the *Myrosma*.

MYROSPERMUM, so named by Jacquin from *μυρον*, balsam, and *σπερμα*, seed, alluding to the balsamic exudation from the seed and seed-vessel, which, in the species he described, is of a strong and disagreeable scent. See MYROXYLON, in which this genus of Jacquin, and its name, are now sunk.—Schreber and Willdenow seem to have been led into this measure by the authority of Linnæus, of whose works they properly considered themselves as but the editors, and still more perhaps by that of Mutis, the reputed author of the name *Myroxylon*. Yet as the same appellation had previously been given by Forster, in his *Genera*, t. 63, to a different genus, the original name of Jacquin might as well have remained for this. So indeed have Jussieu and Lamarck actually decided the matter, and a confusion of synonyms, in this as well as too many other instances, needlessly encumbers the science. In this dilemma we prefer following the Linnæan writers, and shall retain, for Forster's genus, Schreber's name of XYLOSMA; see that article hereafter.

MYROXYLON, from *μυρον*, balsam, and *ξύλον*, wood, the tree which yields the precious balsam of Peru. Linn. Suppl. 34. Schreb. 281. Willd. Sp. Pl. v. 2. 546. Mart. Mill. Dict. v. 3. (*Myrospermum*; Jacq. Amer. 120. Juss. 365. Lamarck Dict. v. 4. 191. Illustr. t. 341.) Class and order, *Decandria Monogynia*. Nat. Ord. *Lomentaceæ*, Linn. *Leguminosæ*, Juss. 10. Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, bell-shaped, with five slight shallow teeth. *Cor.* Petals five, unequal, irregular, with claws inserted into the receptacle; the upper one broad, inversely heart-shaped, reflexed; the rest lanceolate, narrow, straight, slightly spreading; claws narrow, linear, the length of the calyx, or longer. *Stam.* Filaments ten, thread-shaped, smooth, the length of the calyx, erect; anthers erect, oblong, with a furrow at each side, a notch at the base, and a small terminal point. *Pist.* Germen superior, stalked, hanging far out of the flower, scimitar-shaped, compressed, tapering at the base; style awl-shaped, short, ascending; stigma simple, obtuse. *Peric.* Legume two-edged, oblong, compressed, tapering at the base, dilated towards the top, of one cell, not bursting. *Seed* almost always solitary, roundish-oblong, compressed, situated near the end of the legume.

Eff. Ch. Calyx bell-shaped. Petals five; the upper one largest. Germen stalked, longer than the corolla. Legume with a single seed near the top.

1. *M. peruiferum*. Balsam-tree of Peru. Linn. Suppl. 233. Willd. n. 1. (*Hoitziloxitl*; Hernand. Mex. 51. Cabureiba, the second species; Pis. Bras. 57. 119, the figure in the latter place erroneous.)—Leaflets pointed, emarginate. Claw of the larger petal twice the length of the calyx.—Native of the warmest parts of Mexico and Peru, in mountainous situations. Hernandez says the Mexican kings culti-



vated it in their gardens; and that if the trunk or bark be wounded, at any time of the year, but especially at the end of the rainy season, the celebrated and valuable balsam of Peru distils from the wound. "This is of a dark or blackish orange colour, of an acrid and somewhat bitter taste, with a most powerful but highly agreeable smell." Linnæus was always, as his son records, peculiarly anxious to ascertain the plant which yields this precious balsam; but he never had the satisfaction of knowing it. After his death, Mutis sent specimens of the leaf, flowers and fruit to the younger Linnæus, which are now before us, and from which the description in the *Supplementum* was made. The tree is said by Hernandez to be the size of a lemon-tree. The leaf in our specimen is not complete, wanting the lower part. What remains consists of five leaflets, each on a short, round, downy partial stalk, and so disposed on a partially downy common stalk, as to shew they are naturally alternate, only occasionally and imperfectly opposite, one of them being terminal. It is however not to be wondered at, that the younger Linnæus, judging by this specimen alone, took the leaf to be abruptly pinnate, and hence an important disagreement appears between this species and the two following in the descriptions of authors; which, however, proves to be unfounded, for they all have alternately pinnate leaves, with a terminal leaflet. The leaflets in the present species are near an inch and half long, ovate-oblong, with a broadish, elongated, obtuse and emarginate point; their margin entire, though somewhat crumpled or wavy; both sides smooth and rather shining, bright green, with one rib, and many fine reticulated veins. When held against the light, they appear full of singularly elegant pellucid spots, most of them small and roundish, but some linear, larger than the rest. Flowers numerous, in a long, downy, simple cluster, on slender scattered stalks, scarcely an inch long, with a minute concave bractea at the base of each. We know not on what authority Linnæus describes the clusters as axillary. The calyx is hoary with fine soft down. Petals and stamens whitish. Germen smooth, green, hanging out of the flower in a remarkable manner. Legume a foot long, and about an inch broad, thick-edged, with a short oblique point. Mutis says in his letter, that the fructification of this plant is nearly the same as that which yields the Balsam of Tolu. Of this we have never seen either a specimen or figure; nor do we know on what their generic distinction is properly founded. See *TOLUIFERA*.

2. *M. pedicellatum*. Long-stalked Balsam-tree. Willd. n. 2. (*Myrospermum pedicellatum*; Lamarck Dict. v. 4. 191. Illustr. t. 341. f. 1.)—Leaflets elliptical, abrupt, emarginate. Claw of the larger petal the length of the calyx; stalk of the legume longer.—Gathered by Joseph de Jussieu in Peru. Lamarck's figure and description were made from the drawing and specimens the former brought from thence, nor have we any other materials than what Lamarck's works afford; but these abundantly suffice to distinguish the species. This is a large tree, called in its native country *Quina-quina*, like the Peruvian bark or *Cinchona*, and vulgarly *Saumerio*. The trunk is said to be two feet thick, with an ash-coloured bark; the wood very hard, used for building, as well as for constructing sugar-mills; whitish, with a red or blackish heart. Leaves alternate, of from seven to fifteen alternate stalked leaflets, with an odd one, all of equal size, elliptical, obtuse, emarginate, entire, near an inch and half long, full of pellucid dots or lines. Inflorescence much like the former. Flowers similar, except that the claw of the larger petal is not represented longer than the calyx. The legume however appears to be of a much shorter proportion than in *M. peruvianum*, and abrupt, not tapering, at the base; its

stalk is slender, longer than the calyx, whose rim only seems to be deciduous. Seed solitary, oblong, curved. Nothing is said respecting any balsamic quality or exudation in this species. The specific name is not very good, but we scarcely know how to find a better, unless we had more information from some person who had compared this with the first species. If it be really not balsamic, *inodorum* would be a suitable appellation.

3. *M. frutescens*. Fœtid Balsam-tree. Willd., n. 3. (*Myrospermum frutescens*; Jacq. Amer. 120. t. 174. f. 34. Lamarck Illustr. t. 341. f. 2. Dict. v. 4. 191, excluding some of the synonyms.)—Leaflets elliptical, abrupt, emarginate. Stalk of the legume shorter than the calyx.—Gathered by Jacquin, in dry bushy places, at the foot of a mountain near Carthagena, South America. Stem shrubby, eight or ten feet high, not much branched. Leaves deciduous, alternately pinnate, with an odd leaflet, the leaflets all uniform, elliptical, strongly emarginate, smooth, about the size and shape of the last. Clusters lax, nearly terminal, erect. Flowers pale rose-coloured. Legume about three inches long, as in the last, with scarcely ever more than one seed, which, like the legume itself, discharges a balsam of a strong and fœtid odour. The fruit remains long on the tree, after the leaves are fallen.—Lamarck improperly confounds this species with the first, though he rightly judged that there must be a terminal leaflet in both. He errs moreover, and Willdenow follows him, in saying the legume is sessile. Jacquin expressly describes the germen as stalked, though by his figure it is evident that the stalk, in the ripe fruit, does not extend beyond the calyx. S.

MYRRH, MYRRH, from *μύρρις*, of *μύρρα*, *I run or trickle*, a kind of gum resin, issuing by incision, and sometimes spontaneously, from the trunk and larger branches of a tree growing in Arabia, Egypt, and especially in Abyssinia.

Authors are not agreed about the tree which produces this gum: it is true they all make it small and thorny; but they disagree about the form of its leaves. In several respects it resembles the *acacia vera*, which is the *Mimosa Nilotica*; and this agrees with the description of the tree given by Dioscorides. The trees producing myrrh grow on the eastern coast of Arabia Felix, and in that part of Abyssinia which is situated near the Red sea, and called by Mr. Bruce Troglodyte. It is imported to us in chests, each of which contains from one to two hundred weight. The Abyssinian myrrh comes to us through the East Indies, and that produced in Arabia is brought by the way of Turkey.

The druggists have been accustomed to sell two kinds of myrrh, viz. *myrrh in tears*, which they call *slatte*; the other *ungulata*, or in nails.

Of the first kind, the best is bright, yellow, and in transparent drops, friable, light, of a strong disagreeable smell: but this is very rare, and most of that in use is the *ungulata* myrrh, so called from little white spots observed thereon, much like those on the nails of the fingers.

The best is in little masses, or tears, reddish and transparent: the finest pieces of myrrh, when broken, are sometimes found to contain a kind of unctuous liquor, the most precious part of the myrrh, and the real *slatte* of the ancients.

But though Pliny and Dioscorides speak of *slatte* as if it was fresh or liquid myrrh, it is said by Mr. Bruce, that they could never see myrrh in that state; because it is said by the natives to harden on the tree instantly as soon as it is exposed to the air; and, therefore, the *slatte*, he supposes, must have been a composition of myrrh and some other ingredient. The quality of myrrh depends on the age and health



health of the tree, the manner of making the incision in it, the time of gathering the myrrh, and the circumstances of the climate where it was gathered.

In order to have myrrh of the first or most perfect sort, the savages choose a young vigorous tree, whose bark is without moss, or any parasite plant; and, above the first large branches, they give the tree a deep wound with an axe. The myrrh, which flows the first year, through this wound, is myrrh of the first growth, and never in very great quantity. This operation is performed some time after the rains have ceased, or from April to June; and the myrrh is produced in July and August. The sap, once accustomed to issue through this gash, continues to do so spontaneously, at the return of every season; but on account of the tropical rains, which lodge water and dirt in the gash, the tree has begun to rot, and become foul in the wounded part, and the myrrh issuing in the second year is of a second quality; and sells at Cairo about a third cheaper than the first. The myrrh, also, produced from the gashes near the roots, and in the trunks of old trees, is of the second growth and quality, and sometimes worse. This is, however, the good myrrh of the Italian shops, every where but in Venice: it is of a blackish red, foul colour, solid and heavy, losing little of its weight by being long kept; and it is not easily distinguished from that of Arabia Felix. The third and worst kind is gathered from old wounds or gashes, formerly made in old trees; or myrrh that, passing unnoticed, has hung upon the tree ungathered for a whole year; black, and earth-like in colour, and heavy, with little smell and bitterness; and is apparently the *caucalis* of the ancients. Mr. Bruce farther observes, that the greasiness of myrrh is owing to the savages using goat-skins, anointed with butter, for suppling them, in which they put their myrrh when gathered; in which skins it remains, and is brought to market; so that this is a mark that myrrh is fresh gathered, which is the best quality that myrrh of the first sort can have. Mr. Bruce further says, that Sassa gum is fraudulently mixed with the myrrh. Phil. Trans. vol. lxxv. pt. ii. art. 40. p. 408.

Myrrh has somewhat of a fragrant odour, and bitter aromatic taste. Those pieces of an irregular shape, called tears, are translucent, of a reddish-yellow colour, brittle, breaking with a resinous fracture, and easily pulverized. It does not melt when bruised, and is not very inflammable. Its specific gravity is 1.360. Such are the characteristic properties of good myrrh: but it is often adulterated, and is then opaque, and either white, or of a dark colour approaching to black, with a disagreeable odour. Myrrh is partially soluble in water, alcohol, and ether. In boiling water it almost totally dissolves, but as the liquor cools a portion of resinous matter subsides.

By evaporating the aqueous infusion, an extract is obtained; and by distillation, with a boiling heat, the whole of its flavour arises, partly impregnating the distilled water, and partly collected and concentrated in the form of an essential oil; which is in smell extremely fragrant, in taste remarkably mild, and so ponderous as to sink in the aqueous fluid; whereas the oils of most, perhaps of all, of the other gummy resins swim. Triturated with soft or distilled water, almost the whole will be dissolved, and form an opaque yellowish solution: the greatest part, however, will be deposited by rest, and more than one-third of the gum-resin will be dissolved. The alcoholic tincture is rendered milky and opaque, when mixed with water, but no precipitate appears.

If some powdered myrrh be inclosed in the white of a hard boiled egg, and set in a moist cellar, the liquor, into

which the egg will be gradually resolved, will extract nearly all the smell and taste of the myrrh. This liquor, which is commonly called *oil of myrrh, per deliquium*, may be precipitated and coagulated by spirit of wine: and this coagulum is soluble by water. Rectified spirit dissolves less of this concrete than water, but extracts more perfectly that part in which its bitterness, flavour, and virtues reside.

Ether digested in powdered myrrh dissolved three parts in eight; and the tincture evaporated in water deposited  $2\frac{1}{2}$  grains of very bitter resin, and half a grain of extractive matter, which also tasted bitter. The part insoluble in ether was almost wholly soluble in water, and afforded a solution resembling that of acacia gum; but different from it inasmuch as it was precipitated by solutions of muriate of mercury, and of superacetate of lead. Hence it has been concluded, that myrrh consists of resin, essential oil, extractive matter, and mucus rather than gum.

This bitter, aromatic, gummy resin enters a great number of medicinal compositions; it is a warm corroborant, deobstruent, and antiseptic: it is given from a few grains to a scruple and upwards, in uterine obstructions, cachexies, putrid fevers, &c. and often employed also as an external antiseptic and vulnerary. It has been successfully employed in phthical cases as a pectoral, when the inflammatory symptoms and hectic fever do not run high: and though allied to some of the balsams, it is found to be more efficacious and less irritating to the system. As a tonic, in cases of debility, as amenorrhœa, chlorosis, and convalescencies, myrrh is advantageously combined with aloes, cinchona, or other bitters and chalybeates; and in phthisis with nitre, digitalis, opium, camphor, and the sulphate of iron or zinc. Combined with oxyd of zinc it has been found extremely useful in the peculiar cough which sometimes accompanies pregnancy, when it continues after abortion.

As an expectorant, myrrh is often employed in humoral asthma and chronic catarrh, and it has been given with the same view in phthical affections. As a local stimulant the alcoholic solution of myrrh diffused in water is used as a lotion in a spongy state of the gums, and for correcting the fetid discharge of vitiated ulcers, especially when connected with caries of the bone, and as a gargle in cynanche maligna.

Its bitterness renders it good for the stomach, and against worms; and it is chewed to prevent infection from contagious diseases. Dr. Quincy says, it is excellent to cleanse and strengthen the womb, and against tickling rheums; a good detergent; and, as such, much used externally in unguents for the healing of wounds: it makes the principal ingredient in embalming.

It is an apophthegm of chemists, derived from Van Helmont, that whoever can make myrrh soluble by the human body, has the secret of prolonging his days. And Boerhaave owns there seems to be truth in this from its resisting putrefaction. He himself, and other chemists before him, have given methods for making solutions of myrrh, but only by means of alcohol. It seems not a little surprising that such great chemists should never find out that myrrh is soluble in common water.

Myrrh is administered in substance, or in the form of watery infusion, or tincture properly diluted. A watery extract is ordered in some foreign pharmacopeias, and preferred by many physicians, under a notion that it is less heating than the gum-resin: but others conceive that, whilst it is agreeably bitter, it does not differ from a diminished dose of the myrrh.

The official preparations are as follow: *viz.* compound mixture of iron; for which see MIXTURE:—Aloëtic pills



pills with myrrh, called "pilulæ Rufi," pills of iron and myrrh, compound galbanum pills, compound assafœtida pills, and compound rhubarb pills; for each of which, see PILLS.—Tincture of myrrh, compound tincture of aloë, and ethereal tincture of aloë; for which, see TINCTURE.

MYRRHEN, in *Ancient Geography*, a town of Asia, in Mesopotamia, situated on the eastern bank of the Euphrates.

MYRRHIN, in *Antiquity*. See MURRINE.

MYRRHIS, in *Botany*, *μυρρίς* of Dioscorides, or at least very near it, a genus of umbelliferous plants, retained by Bauhin, and several of the modern systematic writers; but sunk by Linnæus, for the most part, as well as by Jussieu, in *Scandix* and *Cherophyllum*.—Tourn. Inst. 315. t. 166. Lamarck Fl. Franc. v. 3. 441. Hall. Hist. v. 1. 329. Michaux Boreal-Amer. v. 1. 170. Gærtner. t. 23.—Class and order, *Pentandria Digynia*. Nat. Ord. *Umbellatæ*.

Tournefort distinguishes *Myrrhis* from *Cherophyllum* by the furrows of its fruit, which are wanting in the latter genus. Lamarck on the contrary makes a hairy fruit, without *striae*, the character of *Myrrhis*. Haller agrees with Tournefort. Gærtner defines the essential characters thus.

Umbel compound. General involucre none. Fruit oblong, somewhat beaked. Kernel as long as the seed.

Michaux copies this word for word. It is evident therefore that the ideas of all the above authors do not comprehend one and the same genus. The most natural conception of the genus seems to us that of Gærtner, which depends on the want of a real beak to the seed. But when we consider how various this appendage is in the different species of *Scandix*, and that there is an external appearance of it, as acknowledged by Gærtner's definition, even in his *Myrrhis*, we cannot but hesitate to adopt the latter, though we allow the question to be one of the most difficult in this difficult order. The species which Gærtner enumerates and figures are four.

1. *M. odorata*. (*Scandix odorata*; Linn. Sp. Pl. 368. Engl. Bot. t. 697.)

2. *M. aurea*. (*Cherophyllum aureum*; Linn. Sp. Pl. 370. Engl. Bot. t. 2103. Jacq. Austr. t. 64.)

3. *M. temula*. (*Cherophyllum temulentum*; Linn. Sp. Pl. 370. Engl. Bot. t. 1521. Jacq. Austr. t. 65.)

4. *M. canadensis*; Riv. Pent. Irr. t. 54. (*Sison canadense*; Linn. Sp. Pl. 363.)

To these Michaux adds

5. *M. Claytoni*; Mich. Boreal-Amer. v. 1. 170.—"Foot-stalk deeply three-cleft; partial ones with three to five oblong-oval, lobed and somewhat pinnatifid leaflets. Umbel of few rays, spreading. Fruit elongated, round, smooth."—Native of the Alleghany mountains. "Stem nearly two feet high, erect. Leaves downy, but not hoary. Flower-stalks terminal, in pairs. General as well as partial umbels divaricated and lax when in fruit; their rays very few, from three to five, very long. Fruit about two to each partial umbel." Michaux.—We believe this is a plant sent by Kalm to Linnæus, and confounded by the latter, in his herbarium, with *Cherophyllum temulentum*. We have always thought it a new species of *Scandix*.

MYRRHITES LAPIS, in *Natural History*, a name used by many of the ancient authors for a semi-pellucid stone of the nature of the agates; and seeming to have been the yellow cornelian of the moderns.

MYRSINE, in *Botany*, a name adopted from the Greeks (*μύρσιν*) which properly belongs to the Myrtle, *Myrtus*; but being unoccupied, Linnæus referred it to this African

shrub, which is of a similar habit.—Linn. Gen. 106. Schreb. 146. Willd. Sp. Pl. v. 1. 1121. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 25. Brown. Prodr. Nov. Holl. v. 1. 533. Juss. 152. Lamarck Dict. v. 4. 193. Illustr. t. 122. Gærtner. t. 59. Class and order, *Pentandria Monogynia* (*Polygamia Dioecia*, Brown.) Nat. Ord. *Bicornes*, Linn. *Sapotis affine*, Juss. *Ophisosperma*, Vent. *Myrsinæ*, Brown.

Gen. Ch. Cal. Perianth inferior, small, in five deep, nearly ovate, segments, permanent. Cor. of one petal, divided half way down into five, rarely but four, equal, semi-ovate, obtuse, approximating segments. Stam. Filaments five, very short, inserted into the middle of the corolla, opposite to each segment; anthers erect, awl-shaped, emarginate at the base, of two cells opening lengthwise. Pist. Germen superior, nearly globose, almost filling the corolla; style cylindrical, protruding a little beyond the corolla; stigma prominent, large, lobed or jagged. Peric. Berry roundish, depressed, of one cell, with a brittle coat, with the rudiments of four or five seeds, attached to a globular central receptacle, all of them but one abortive. Seed. solitary, nearly globose, "affixed obliquely to the bottom of the berry, taking place of the original central receptacle, which in the ripe fruit dissolves into a soft pulp." Gærtner.

Ess. Ch. Corolla half five-cleft, closed. Germen filling the corolla. Anthers nearly sessile. Stigma lobed. Berry superior, brittle. Seed solitary, globose, oblique.

1. *M. africana*. African Myrsine. Linn. Sp. Pl. 285. (*Vitis Idæa æthiopica*, myrti tarentinæ folio, flore atropurpureo; Comm. Hort. v. 1. 123. t. 64.)—Leaves elliptical, distantly toothed, acute.—Native of the Cape of Good Hope, from whence it was one of the first plants introduced into the gardens of Europe. It is a hardy greenhouse shrub, flowering in the spring very plentifully. The stem is bushy, three or four feet high, alternately branched, clothed more or less with short, rusty, prominent, rigid pubescence. Leaves numerous, alternate, stalked, rather above half an inch long, elliptical, acute at both ends, somewhat revolute, with a few shallow distant serratures or teeth, smooth; their upper surface of a dark shining green; the under much paler, opaque, with a prominent simple mid-rib. Stipules none. Flowers small, few together, in sessile axillary umbels, somewhat drooping. Bractæes small, concave, reddish, smooth, at the base of each stalk, which is red and smooth, angular, scarcely so long as the flower it bears, and both together hardly equal a quarter of an inch. The calyx and corolla are red or purplish, besprinkled with glandular dots. Berry the size of a pea, pale at first, then of an elegant purple, crowned with the style.

2. *M. retusa*. Round-leaved Myrsine, or Tamaja. Ait. Hort. Kew. ed. 1. v. 1. 271. Venten. Hort. Cels. t. 86. (*M. scabra*; Gærtner. v. 1. 282?)—Leaves roundish-obovate, obtuse, serrated, with several notches at the extremity.—Brought by Mr. Masson from the Azores, in 1778. It requires the same treatment as the former, flowering in June. Mr. Brown hints that these two species are scarcely distinct. The present differs chiefly in having rounder leaves, ending, not in a point, but in a toothed notch. The flowers are like those of *M. africana*. The stigma in both is remarkably large, and copiously lobed and fringed.

3. *M. variabilis*. Variable-leaved Myrsine. Brown n. 1. —Leaves obovate-oblong, entire or toothed. Umbels axillary, sessile. Anthers sessile. Flowers occasionally four-cleft. Gathered by the late Mr. David Burton, as well as by Mr. Brown, near Port Jackson, New South Wales. A larger shrub than the foregoing species. Leaves near three inches long, blantish, with various shallow teeth in their upper



upper part; the base tapering and entire; both sides are smooth, and of a light green, reticulated with numerous veins. *Footstalks* thick, smooth, angular, about three quarters of an inch long. *Umbels* of about eight or ten flowers; their *stalks* angular, one-third of an inch in length, rusty in our specimens, like the *calyx* and *corolla*. The latter is very deeply divided. The young shoots and leaf-buds are clothed with rusty down.

4. *M. crassifolia*. Thick-leaved Myrsine. Brown n. 2. "Flowers axillary, aggregate, nearly sessile. Leaves obovate, nearly entire."—Gathered by Mr. Brown in the tropical part of New Holland. The leaves are two or two inches and a half long. The almost sessile flowers form a distinguishing character.

5. *M. urceolata*. Cup-flowered Myrsine. Brown n. 3.—Leaves lanceolate-oblong, entire. Umbels axillary, sessile; stalks smooth. Flowers four-cleft. Corolla of the male pitcher-shaped, longer than the stamens.—Gathered by Sir Joseph Banks in the tropical part of New Holland. Mr. Brown observes that it nearly agrees in character with *Walleria laurifolia*, Swartz Ind. Occ. v. 1. 248, but the inflorescence of the latter is a terminal panicle.

6. *M. Manglillo*. Laurel-leaved Myrsine. (*Bumelia Manglillo*; Willd. Sp. Pl. v. 1. 1087. *Manglilla*; Juss. 151. *Caballeria*; Fl. Peruv.)—Leaves elliptical, obtuse, entire. Umbels axillary, sessile; stalks smooth. Anthers sessile.—Found by Dombey in great plenty about Lima in Peru, growing near rivulets, and flowering in May. It has the aspect of the Cherry Laurel, and rises to the height of 12 feet. Leaves three or four inches long, on short thick stalks, exactly elliptical, quite entire, evergreen, smooth. Flowers about six in each umbel, five-cleft, smooth in all their parts. This shrub is taken at Lima for the Paraguay tea, which its leaves resemble, but the seeds are very different. Dombey named it *Dubamelia*, unconscious probably that *Hamellia* was already consecrated to the memory of the great French physiologist of vegetables.

Mr. Brown mentions several other species or genera of different authors, as really belonging to *Myrsine*; as *Athruphyllum* of Loureiro; *Sideroxylon Melanophleas*, Linn. Mant. 48, which is *Roemeria* of Thunberg's Nova Genera; *Samara coriacea* of Swartz; *S. pentandra*, Ait. Hort. Kew. ed. 1. v. 1. 160; *S. floribunda*, Willd. Sp. Pl. v. 1. 665, which is *Rapanea* of Aublet, t. 46; *Badula* Juss. 429, excluding the synonym of Buemann; as well as several supposed *Ardisia*, whose stigma is divided, and their germen with four or five seeds.—*Ardisia* itself is very near *Myrsine*, differing in having all perfect or united flowers, a simple stigma, a germen with an indefinite number of seeds, above five, and approximated anthers. *Pyrgus* of Loureiro is said by Mr. Brown, on the authority of an original specimen, to be an *Ardisia*.

MYRSINE, in *Gardening*, comprehends a plant of the evergreen exotic shrubby kind, of which the species cultivated is the African myrsine (*M. africana*.)

*Method of Culture*.—This plant may be increased by sowing the seeds in spring on a hot-bed; and when the plants are fit to transplant, planting them out singly into small pots of good mould, due shade and water being given, and in the autumn they may be removed into the greenhouse for protection during the winter season.

They may also be raised by planting cuttings of the young shoots in pots in summer, due shade and water being given. They afterwards require the management of other greenhouse plants.

They afford variety among collections of plants of the greenhouse kind.

MYRSINÆ, in *Botany*, a natural order of plants, so called

from the principal genus which enters into it; see the preceding article. Ventenat, who founded this order, in his *Jardin de Cels*, p. 86, named it *Ophiosperma*; from the long, oblique, and undulating form of the embryo, somewhat like a snake, or rather like the eels, which microscopic writers describe as found in vinegar. This idea seems to have been suggested by Gærtner's name and plate of his *Anguillaria*, one of the order in question; but Mr. Brown prefers the above appellation, not only because it is conformable to the practice of Jussieu, but also because, in many of these plants, the embryo is straight.

The characters of the *Myrsinæ* are thus given, in Brown's *Prodr. Nov. Holl.* v. 1. 532.

*Flowers* either united or polygamous.

*Calyx* in five, sometimes four, divisions, permanent.

*Corolla* of one petal, inferior, in five, sometimes four, equal segments.

*Stamens* five or four, opposite to the segments of the corolla, and inserted into their base. *Filaments* distinct, rarely combined, sometimes wanting; in some instances accompanied by five intermediate barren ones, resembling petals. *Anthers* attached to the filaments by their emarginate bases, each of two cells, which burst longitudinally.

*Germen* solitary, of one cell, with the rudiments of several seeds, which are either determinate or indeterminate in number, peltate, and inserted into the cells of a central unconnected receptacle. *Style* one, often very short. *Stigma* either lobed or undivided.

*Drupa* or *Berry* mostly with one seed, sometimes with from two to four.

*Seeds* peltate, with a hollow scar, and a simple integument. *Albumen* horny, of the shape of the seed.

*Embryo* transverse with respect to the scar, nearly cylindrical, mostly curved. *Cotyledons* short.

*Radicle* (when several seeds come to maturity) inferior.

*Plumula* inconspicuous.

These plants are either *trees* or *shrubs*, with alternate, undivided, coriaceous, smooth leaves, either serrated or nearly entire; sometimes they are very humble *shrubs*, with opposite or ternate leaves. *Inflorescence* umbellate, corymbose, or paniced, axillary, rarely terminal. *Flowers* small, white, for the most part marked with sunk glandular dots or lines.

Mr. Brown remarks that "Ventenat could hardly understand the true structure of the fruit, as he was ignorant of the plurality of germs at an early stage, as well as of their insertion; for the embryo, which, with respect to the scar, is always transverse, because the seed is peltate; with respect to the fruit, becomes transverse only in those cases where a single germ comes to perfection; for where the fruit perfects many seeds, as in *Jacquinia* (which belongs to this order) the embryo is erect. Hence, through the medium of that genus, there appears a great affinity in the order of *Myrsinæ* to the *Sapota*, and thence to the *Primulaceæ* through *Bladbia*. *Aegiceras* is without hesitation referred to this order, on account of the internal structure of its germen, and the similar glandular lines of that part, as well as on account of the stamens of that genus being opposite to the segments of its corolla."

The same intelligent author adds, that "in a certain tribe of trees, growing about the shores, chiefly of tropical climates, and formerly all erroneously huddled together under the name of *Rhizophora*, because the embryo germinates before the seed falls, the respective affinities are by no means to be made out by an examination of the ripe fruit, but, as far as those affinities depend upon the fruit, by that of the internal structure of the germen. From a neglect of this, Jussieu



Jussieu has been led into the error of referring *Rhizophora* and *Bruguiera* to his order of *Loranthæa*."

Examples of the order before us are *Myrsine*, *Ardisia*, *Bladbia*, *Wallenia*, *Aegiceras* of Gærtner, and of König in *Annals of Botany*, v. 1. 131, (*Rhizophora corniculata* of Linnæus.) *Jacquinia*, &c.

The *Jacquinia venosa*, Swartz Prodr. 47, is not only very distinct from the several original species as to genus, but even in natural order, being one of the *Rubiaceæ*.

Ventenat, besides what he has given us, respecting this subject, in the *Jardin de Cels* above quoted, has made many excellent remarks upon it under the *Ardisia crenulata*, tab. 6 of the elegant work entitled *Choix de Plantes*, which he left unfinished at his death, in five Nos. of six plates each.

—Some genera, which he first indicated as belonging to this order, are by Mr. Brown not only retained here, but actually sunk in the genus to which it owes its name. See MYRSINE.

MYRTHE, in *Geography*, a town of Hindoostan, taken and destroyed by Timur-Beg in the year 1399. The men were slayed alive, and the women and children sold for slaves; 120 miles E. of Delhi.

MYRTI, in *Botany*; an elegant natural order of plants, named from the most familiar genus among them; see MYRTUS. This is the 89th in Jussieu's system, or the 7th of his 14th class. For the characters of that class see MELASTOMÆ and FICOIDEÆ.

Characters of the Myrti.

*Calyx* of one leaf, cup-shaped or tubular, superior, rarely half superior, either naked, or furnished with two scales, at the base. *Petals* definite, inserted into the top of the calyx, equal in number to its segments, and alternate with them. *Stamens* indefinite, inserted into the same part, below the petals; anthers small, roundish, curved, bordering the summit of the dilated filaments. *Germen* simple, inferior, rarely but half inferior; style single; stigma simple, or rarely divided. *Fruit* pulpy, either a berry or drupa, in some few instances capsular, inferior, or rarely half inferior, of one cell or many, each cell containing one or numerous seeds. *Coraculum* either straight or curved, destitute of albumen. *Stem* arboreous or shrubby, its branches usually opposite. *Leaves* mostly opposite and simple, rarely alternate, in very many instances dotted.

Section 1. *Flowers* either axillary, or oppositely disposed on many-flowered stalks. *Leaves* mostly opposite and dotted.

*Alangium* of Lamarck, Willd. Sp. Pl. v. 2. 1174, *Dodæcas*, *Melaleuca*, *Leptospermum*, *Guapurium* of Jussieu, *Psidium*, *Myrtus*, *Eugenia*, *Caryophyllus*, *Decumaria*, *Punica*, *Philadelphus*, *Sonneratia*, *Fatidia*, *Catinga*.

To these are to be added *Backea* of Linnæus, mistakenly referred by Jussieu to his *Onagra*; *Eucalyptus* of L'Heritier; and *Calypttranthes* of Swartz, though each of these three genera forms an exception to some part of the above characters, the first in its stamens, which are definite in number (eight); the two last in their corollas, which do not consist of distinct or definite petals; that of *Eucalyptus* being a coriaceous, mostly conical, lid or cover; that of *Calypttranthes* a more membranous and flattish lid.—These two genera differ widely from each other in their fruit; *Calypttranthes* resembling *Myrtus* in that respect, *Eucalyptus* nearly approaching *Metrosideros*, another new genus, which is likewise to be added to the present section, and has all the proper characters of the order. The sequel of Mr. Brown's Prodromus will perhaps still augment the above catalogue, New Holland being rich in *Myrti*, many new species of which may be found described in *Transf. of the Linn. Soc.* v. 3. 255, and among them two more genera

in addition to the above; these are *FABRICIA* and *IMBRICARIA*; to which we refer the reader in their proper places; as well as to *EUCALYPTUS* and *METROSIDEROS*.—*Imbricaria*, it must be observed, has definite stamens, they being equal in number to its petals. Hence appears the necessity of new modelling the above characters of the order, in what regards the stamens and corolla.

Section 2. *Flowers* racemose, alternate. *Leaves* mostly alternate, and not dotted.

*Butonica*, which is *Barringtonia* of Forster and the younger Linnæus; *Stravadium* of Jussieu, a genus formed of the Linnæan *Eugenia racemosa* and *acutangula*, &c.; *Pirigara* of Aublet, see *GUSTAVIA*; *Couroupita* of Aublet; and *Lecythis* of all authors.

MYRTIDANON, a word used by the old Greek writers on medicine, but in a different sense by different authors. Hippocrates calls it a round fruit, which the Persians in his time called pepper, and which probably had all the heating qualities of that fruit. Dioscorides expresses it by an excrecence common on the trunk of the myrtle, and which, as he observes, is more astringent than the myrtle itself. *Myrtidanum vinum* also signified wine impregnated with myrtle.

MYRTIFORM GLANDS, in *Anatomy*. See GLAND.

MYRTIFORMES CARUNCULÆ. See CARUNCULÆ.

MYRTIFORMIS NASI, a name given by Santorini, and some others, to one of the muscles of the face, called by Albinus depressor alæ nasi, and by Cowper and others, depressor labii superioris, constrictor alæ nasi.

MYRTILIS, in *Ancient Geography*, *Meritola*, a town of Spain, in Lusitania, situated on the right of the Anas, S.E. of Pax Julia; called also "Julia Myrtilis."

MYRTILLUS, in *Botany*, a name applied to the Whortleberry, *Vaccinium*, on account of the resemblance of its round blueish-purple berries to those of the Myrtle. It is still retained as the specific appellation of our Bilberry, *Vaccinium Myrtillus*, to whose fruit the above comparison is most applicable.

MYRTIS, in *Ancient History* and *Biography*, a Grecian lady of distinguished abilities in poetry, of whom Pindar had his first instructions in his art. It was during this period that Pindar became acquainted with the poetess Corinna, who was likewise a student under Myrtis. Plutarch tells us, that he profited from the lessons, which Corinna, more advanced in her studies, gave him at this school. It is very natural to suppose, that the first poetical effusions of a genius so full of fire and imagination as that of Pindar, would be wild and luxuriant; and Lucian has preserved six verses, said to have been the exordium of his first essay, in which he crowded almost all the subjects for song, which ancient history and mythology then furnished. Upon communicating this attempt to Corinna, she told him smiling, that he should sow with the hand, and not empty his whole sack at once. Pindar, however, soon quitted the leading-strings of these ladies, his poetical nurses, and became the disciple of Simonides, now arrived at extreme old age; after which he soon surpassed all his masters, and acquired great reputation throughout Greece; but, like a true prophet, was less honoured in his own country, than elsewhere; for at Thebes he was frequently pronounced to be vanquished, in the musical and poetical contests, by candidates of inferior merit.

MYRTITES, the name of a composition in the ancient pharmacy made of fine honey, and the depurated juice of myrtle-berries boiled up together to a consistence.

MYRTLE, in *Botany*. See MYRTUS.

In Cornwall and Devonshire, where the winters are more favourable



favourable than in most other parts of England, there are large hedges of myrtle, which have been planted for several years, and are very thriving and vigorous; some of which are upwards of six feet high.

**MYRTLE, Candleberry.** See **MYRICA**.

The common Dutch myrtle grows wild in waste watery places, and abounds in the isle of Ely: the leaves, flowers, and seeds of this plant have a strong fragrant smell, and a bitter taste. They are said to be used among the common people for destroying moths, and cutaneous insects; internally, in infusion, as a stomachic and vermifuge: and as a substitute for hops, for preserving malt liquors, which they render more inebriating, and consequently less salubrious; which quality is said to be destroyed by boiling. Lewis.

**MYRTLE-Berries, Myrtilli**, the fruit of the myrtle, with which we are supplied from the southern parts of Europe. The fruit is at first green, but becomes black gradually: within it is a white seed, in form of a crescent, solid, hard, and of an astringent taste; while the fruit continues on the trees, it is succulent and smooth, and only becomes hard and wrinkled, because dried in the sun for the convenience of carriage.

Myrtle-berries are rough and astringent, and are chiefly recommended in alvine and uterine fluxes, and other disorders from relaxation and debility; and appear to be among the milder restringents and corroborants, in the way of syrup, as a strengthener against fluxes and abortion.

The perfumers likewise use them in their perfumes, and draw an essence from them. The German dyers make a blue colour from them. In some places the leaves and branches are also used in the tanning of leather.

A myrtle crown was worn by the general to whom an ovation was decreed, the reason of which, according to Plutarch, in his life of Marcellus, was, that as an ovation was decreed for some remarkable success obtained by treaty, or without much bloodshed, it was proper, that the general, at his public appearance, should be crowned with the tree sacred to Venus, who, of all the deities, was supposed to be most averse to the horrors of war.

**MYRTLE-Leaved Sumach**, in *Gardening*, the common name of a plant of the fumach kind. See **CORIARIA**.

**MYRTLE Island**, in *Geography*, one of the Chandeleur islands, in Nassau bay, on the coast of Florida, on the W. side of the peninsula.

**MYRTOCHEILIDES**, a name given by some authors to the nymphæ in the female pudenda.

**MYRTO-CISTUS**, in *Gardening*, the common name of an ornamental plant. See **HYPERICUM**.

**MYRTOS**, in *Ancient Geography*, an island of the Ægean sea, on the western side of the most southerly point of the island of Eubœa. Pliny says, that it gave name to that part of the Ægean sea called "Myrtoum Mare."

**MYRTUNTUM MARE**, a sea or lake of Greece, between the coast of Acerninia to the east, and the island of Leucada to the west, according to Strabo.

**MYRTUS**, in *Botany*, *μύρτος*; of the best Greek writers, *μύρτιον* of Dioscorides, the Myrtle. Linn. Gen. 248. Schreb. 334. Willd. Sp. Pl. v. 2. 967. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 3. 188. Sm. Prodr. Fl. Græc. Sibth. v. 1. 336. Juss. 324. Lamarck Dict. v. 4. 404. Illustr. t. 419. Gært. t. 38. (Murcia; Linn. Zeyl. 83.)—Class and order, *Icosandria Monogynia*. Nat. Ord. *Hesperideæ*, Linn. *Myrti*, Juss.

Gen. Ch. *Cal.* Perianth superior, of one leaf, in five bluntish permanent segments; elevated internally into a slightly downy rim. *Cor.* Petals five, large, ovate or

roundish, entire, concave, inserted into the calyx. *Stam.* Filaments numerous, capillary, the length of the corolla, inserted into the rim of the calyx; anthers small, roundish. *Pist.* Germen inferior, roundish, of two or three cells; style simple, thread-shaped; stigma obtuse. *Peric.* Berry oval, crowned with the concave base of the calyx, of two or three cells. *Seeds* few, kidney-shaped.

Obs. In some instances the calyx is four-cleft, and petals but four.

Ess. Ch. Calyx five-cleft, superior. Petals five. Berry of two or three cells, with several seeds.

Of this elegant and celebrated genus, only one real species was known to the older botanists, of whose varieties, as they are now esteemed, Tournefort and the writers of his time made various species, which still make a figure in gardeners' catalogues, and indeed are, some of them, very different from each other in their foliage. In the first edition of his *Species Plantarum*, Linnæus defines seven species of *Myrtus*, and in his second 13. Of these several have been removed to other genera; and especially the last, *M. Leucadendra*, Sp. Pl. 676, was subsequently made a distinct genus by Linnæus himself. (See **MELALEUCA**.) In the *Mantissa*, 74, is an additional *Myrtus*, named *angustifolia*; for which see **METROSIDEROS**, species ninth.—*Myrtus brasiliæna* of Linnæus, is the same as his *Eugenia uniflora*; his *M. Cumini*, *Chytraculia*, and *Zuzygium* are now referred to Swartz's new genus of *Calyptranthes*; (see **MYRTI**); but the discoveries of the botanist last named, and of others, have so far augmented the original genus of *Myrtus*, that Willdenow enumerates 28 species. There is frequently some ambiguity betwixt this species and **EUGENIA**, (see that article,) it not being easy at all times to discover, in dried specimens at least, their essential difference, which consists in the single seed of *Eugenia*. By this character *Myrtus Greggii* of Swartz, Willd. n. 20, perhaps belongs to that genus, though the germen has two cells. This is *Greggia aromatica*, Gært. t. 33. Several of Swartz's *Myrti* are described with solitary seeds, and, as we conceive, are on that account doubtful.

The following are genuine examples of *Myrtus*.

*M. communis*. Common Myrtle.—Flowers solitary, with a two-leaved involucre. Leaves smooth.—Linn. Sp. Pl. 673. (*M. latifolia romana*; Mill. Ic. t. 184. f. 1.) This with several of its varieties may be found in Ger. em. 1411, 1412. The most remarkable is the small-leaved kind, equally common in collections with the other. The double-flowered is also not uncommon, but more tender and difficult to propagate than the rest. These plants grow wild throughout the south of Europe, north of Africa, and temperate parts of Asia, chiefly on the sea-coast. The Mediterranean is bordered with natural thickets of Myrtle, even within the spray of the sea, which poets have frequently sung, and all admirers of plants have noticed. Its situation perhaps, even more than its beauty, caused this shrub to be dedicated to Venus; and as the neighbourhood of the sea-shore was so often chosen for the site of her temples, thickets of myrtle are still the common accompaniment of their ruins. The height of the bushy stem in such situations is seldom above three feet. The leaves are evergreen, more or less ovate, entire, smooth, of a rich and polished green; darker in the small-leaved variety, which is preferred in Italy for clipped edges in gardens, and being so treated, rises to the height of 12 or 14 feet. The flowers grow on simple axillary stalks, and are white, with a frequent tinge of red externally. The berries are the size of a small pea, violet, sweetish, with the aromatic flavour,



which pervades the whole plant. They are eaten in the Levant, but a white variety is preferred to the purple.

*M. tomentosa*. Woolly-leaved Myrtle. Ait. Hort. Kew. ed. 1. v. 2. 159. Curt. Mag. t. 250. (*Arbor sinensis*, *canellæ folio minore trinervi*, &c.; Pluk. *Amalth.* 21. t. 372. f. 1.)—Stalks one or two-flowered. Leaves triple-ribbed, downy beneath.—Native of China, from whence Mrs. Norman, a lady long celebrated for her love of plants, and the value of her collection, is said to have obtained this beautiful species about the year 1776. It flowers in the summer; and may be treated as a greenhouse plant, but succeeds best in a stove, where we have sometimes seen it four or five feet high, covered with a profusion of flowers. These are axillary, rose-coloured, an inch and a half broad, with deep-crimson *stamens* and yellow *anthers*. The *germen*, *calyx*, and *stamens*, are delicately hoary. *Leaves* elliptical, obtuse, soft and downy, of a hoary green.

*M. disticha*. Globe-berried Myrtle. Swartz Ind. Occ. v. 2. 894. Sims in Curt. Mag. t. 867.—Stalks axillary, many-flowered, shorter than the leaves. Branches spreading. Leaves two-ranked, ovato-lanceolate, drooping.—Gathered by Dr. Swartz on the mountains of the north part of Jamaica. The negroes, he tells us, call it wild coffee, not only from the resemblance of the berry, but from a similar flavour in the recent seeds, to the real coffee. This is a *shrub* often six feet high, with horizontal spreading branches. *Leaves* remarkably drooping, on short stalks, ovate, pointed, smooth, shining, dotted beneath, furnished with one rib, and many transverse veins. *Flower-stalks* turned upwards, each bearing three or four small, pale bluish-coloured flowers. *Berry* the size and colour of a black currant, of three or four cells, and as many seeds, though sometimes all but one prove abortive. This is with us a hardy stove plant, but of no great splendour.

*M. Pimenta*, Pimento, Allspice, or Jamaica pepper. Linn. Sp. Pl. 676. Woodv. Med. Bot. t. 26. Sims in Curt. Mag. t. 1236. (*M. arborea aromatica, foliis laurinis*; Sloane Jam. v. 2. 76. t. 191. f. 1.)—Flowers in three-forked panicles. Leaves oblong-lanceolate.—Native of the West Indies. It succeeds well in our stoves, if allowed a strong heat, flowering copiously in May and June. The *stem* is arborescent. *Leaves* opposite, often three together; it is not easy to account for Linnæus's having defined them as alternate. *Flowers* very abundant, but small, greenish-white, with a profusion of white anthers. The *fruit*, about the size of pepper, is well known by the name of Allspice. The whole plant partakes of the same aromatic pungent flavour, which resides in a fine essential oil.

Several new species of *Myrtus* have been found by the Spaniards in Chili and Peru. We are also possessed of various undetermined tropical species, whose genus however is uncertain, for want of a sufficient knowledge of the structure of their germen, and number of their seeds.

MYRTUS, in *Gardening*, comprises plants of the evergreen shrubby kind for the greenhouse and stove, of which the species cultivated are, the common myrtle (*M. communis*); the woolly-leaved myrtle (*M. tomentosa*); the two-flowered myrtle (*M. biflora*); the shining myrtle (*M. lucida*); the dioecious American myrtle (*M. dioica*); the Ceylon myrtle (*M. zeylanica*); the sumach-leaved myrtle (*M. coriacea*); and the pimento, Jamaica pepper, or allspice (*M. pimenta*).

Of the first sort there are several varieties, the principal of which are the common broad-leaved Roman myrtle, which grows to the height of eight or ten feet in this climate, but much higher in Italy, where it is the principal under-wood of some of the forests: the leaves are broader than

most of the other varieties, being an inch in breadth; they are an inch and a half long, of a lucid green, ending in acute points, and are sub-fessile, or on very short footstalks; the flowers are larger than those of the other varieties; on pretty long slender peduncles, from two to four at the same axil; the berries ovate, and of a dark purple colour. It is termed by some the *flowering myrtle*, because it flowers more freely here than the others, and *Roman myrtle*, because it abounds about Rome.

The *box-leaved myrtle*, which has the leaves oval, small, fessile, of a lucid green, and ending in obtuse points; the branches weak, and frequently hanging down, when permitted to grow without shortening; the bark is greyish; the flowers are small, and come late in the summer; the berries small and round.

The common Italian myrtle, which has ovate-lanceolate leaves, ending in acute points; the branches grow more erect than in either of the preceding, as also the leaves, whence it is called the gardener's upright myrtle. The flowers are not large; and the petals are marked with purple at their points, whilst they remain closed; the berries are small, oval, and of a purple colour.

There is a sub-variety of this with white berries; and the nutmeg myrtle seems, according to Miller, to be only a sub-variety of it.

The orange-leaved, or what is sometimes termed bay-leaved myrtle, which has a stronger stalk and branches, and rises to a greater height; the leaves are ovate-lanceolate, in clusters round the branches, and of a dark green; the flowers are of a middling size, and come out sparingly from between the leaves; the berries are oval, and smaller than those of the first variety, but it is not so hardy as that.

The Portugal myrtle, which has the leaves much smaller than those of the next, being less than an inch long, and not more than half an inch broad, lanceolate-ovate, acute, of a dull green, set pretty close on the branches; the flowers are smaller; and the berries small and oval.

The broad-leaved Dutch myrtle, which has leaves much less than those of the common sort, and more pointed, standing close together on the branches; the midrib on the under side of the leaves is of a purple colour; they are of a darker green, and sit closer to the branches; the flowers are smaller, on shorter peduncles, and come out a little later than those of the common sort.

The double-flowering myrtle, which is probably a sub-variety of this; the leaves and growth of the plant, the size of the flowers, and the time of the flowering, agreeing better with this than any of the others.

The rosemary-leaved, or thyme-leaved myrtle, which has the branches growing pretty erect; the leaves small, narrow, acute, fessile, and of a lucid green; the flowers are small, appearing late in the season.

These varieties are constant; but there are others which are propagated in gardens and nurseries for sale, which are less considerable and more variable, as the gold-striped broad-leaved myrtle; the broad-leaved Jew's myrtle, having frequently the leaves in threes; the gold-striped orange-leaved myrtle; the silver-striped Italian myrtle; the striped box-leaved myrtle; the silver-striped rosemary-leaved myrtle; the silver-striped nutmeg myrtle; and the cock's-comb, or bird's-nest myrtle.

The ninth species affords the berries which are so much used in culinary operations. They are chiefly imported from Jamaica, whence the name Jamaica pepper; and they have also the name of allspice, from a notion of their taste being compounded of several other spices.

The



The tree begins to bear fruit in three years after it is planted, but does not arrive at maturity until seven, then often yielding one thousand pounds weight of fruit from an acre.

According to Martyn, "the berries are generally gathered in July in their green state, by twisting off the twigs with the hand, or a pole cleft at one end; and are laid on cloth spread over the barbacues or terraced floors raised a little above the ground, inclosed with an upright ledge of eight or ten inches in height, and divided by transverse partitions into four or more square compartments, that each may contain a day's picking. During the first and second day they are turned often, that the whole may be more exposed to the sun; but when they begin to dry, they are frequently winnowed, and laid in cloths to preserve them better from rain and dews, still exposing them to the sun every day, and removing them under cover every evening, till they are sufficiently dried; which usually happens in ten or twelve days, and is known by the darkness of their complexion, and the rattling of the seeds: they appear at this time wrinkled, and changed to a very dark brown. In this state, being ready for the market, they are stowed in bags or casks. Some planters also kiln-dry them with great success."

*Method of Culture.*—The first species, and all the different varieties, are capable of being increased by planting cuttings of the strong young shoots of the same year, making them about six inches long, clearing about three inches of the bottom parts, then twisting them, and setting them into pots filled with light rich earth, closing it well about them, and watering them to settle it. The pots should then be plunged in the tan hot-bed, under glasses, carefully shading them from the sun. This should be done in the beginning of July, or in the early spring. It is likewise useful to cover them close with small glasses.

They may also sometimes be stricken in pots in the natural earth, under a shallow frame, and glasses in the summer months, as well as in the open ground in a warm situation. And slips set out and treated in the same manner as the cuttings, often strike root, and produce good plants.

After the plants, raised in any of the modes, are well-rooted, and begin to shoot, they should be gradually inured to the open air, so as to be set out in it towards the latter end of August in a warm sheltered situation, being brought under the protection of the greenhouse in the beginning of autumn, and placed in the less warm parts of it, having free air admitted when the weather will permit. They should be gently watered during the winter, removing any decayed leaves that may appear upon them, and the mould of the pots kept quite clean. The plants also succeed perfectly when placed under a common frame in the winter season, air being frequently admitted in fine weather. And in the succeeding spring the plants should be removed carefully with balls of earth about their roots into separate small pots of rich light earth, watering them well at the time, and setting them under a frame, or in the greenhouse, till perfectly established, when they may be removed into the open air, being placed in a warm aspect.

Towards the beginning of autumn they should be examined, and such plants as have their roots proceeding through the holes in the bottoms of the pots should be removed into others a size larger, loosening the mould and matted roots, afterwards filling the pots up with fresh rich earth, and watering them well. They should then be placed in a sheltered situation, trimming them to a regular figure, and turning them upright, when they have a tendency to be crooked, by proper sticks. When thus carefully trained

while in their young growth, the stems will afterwards continue straight without support.

These plants are also capable of being increased by layers. All such plants as are furnished with young bottom shoots low enough for laying, may have them laid in spring, in the usual way, when they readily emit roots, and become fit to transplant into separate pots in the autumnal season.

And where feed is made use of, it should be sown in spring, in pots of light mould, and plunged into a moderate hot-bed: the plants soon come up, which, when two or three inches high, should be potted off separately into small pots, and be managed afterwards as the others.

It may be proper to observe, that as the plants advance in growth, some new varieties may, perhaps, be produced.

Those who raise large quantities of these plants annually, should always keep some strong bushy plants, in order to furnish slips or cuttings for the purpose.

The double-flowering and orange-leaved myrtles are the most difficult to raise by cuttings; and the last sort, and those with variegated leaves, are more tender than the others.

The common broad-leaved, and broad-leaved Dutch, as well as the Portugal sorts, succeed in the open ground in warm situations and dry soils.

Where they are intended to have bushy heads, the lower shoots should be trimmed off, and the plants only suffered to branch out at the top in different directions, so as to form handsome heads. Those which are designed to be shrubby should have their lateral branches encouraged, so that they may be well feathered from the top to the bottom. They should afterwards, in general, be left to take their own natural growth, except just taking off the rambling shoots. When their heads become thin and straggling, those shoots which are proper for sending out new shoots to fill up the vacancies, and produce regularly, should be shortened by the knife.

The practice of clipping the shrubs with garden shears into globes, pyramids, &c. as is sometimes done, is very injurious; the necessary trimming should always be performed with the knife, and that only as above, as the plants appear to the most advantage when they grow naturally.

Whenever the heads of the plants become very irregular, or thin and stubby, they may be renewed by heading down all the branches pretty short in spring, and shifting them into larger pots of fresh mould, with the balls of earth about their roots, giving plenty of water during summer, when they will branch out again finely, and form handsome full heads.

In respect to the general culture, as the plants advance in stature they should annually be removed into larger pots, according to the size of their roots; but care should be taken not to put them into pots too large, which causes them to shoot weak, and sometimes proves the destruction of them. When they are taken out of the former pots, the earth about their roots should be pared off, and that within the ball gently loosened, that the roots may not be too closely confined; and then they often may be replaced in the same pots, when not too small, filling up the sides and bottom with fresh rich earth, and giving them plenty of water to settle the earth to their roots; which should be frequently repeated, as they require to be often watered both in winter and summer, and in hot weather they should have it in large quantities.

The proper season for shifting these plants is in April and August; for if it be done much sooner in the spring, the plants are in a slow growing state, and not capable to strike out fresh roots again quickly; and when done later



in the autumn, the cold weather coming on prevents their taking root.

In the autumn, when the nights begin to be frosty, the plants should be removed into the greenhouse; but when the weather proves favourable they may remain abroad until the beginning of November; for if they are carried into the greenhouse too soon, and the autumn should prove warm, they make fresh shoots at that season, which are weak, and often grow mouldy in winter. When the weather is so severe as to require the windows to be kept closely shut, they are often also greatly defaced; on which account they should always be kept as long abroad as the weather will permit, and be removed out again in the spring before they shoot out; and while they are in the greenhouse should have as much free air as possible when the weather is mild and proper for the purpose.

The tender kinds are mostly increased by seeds; but when any of them are pretty branchy, they may also be tried by layers and cuttings. And the eighth sort succeeds best in this way.

The seed should be procured from abroad, preserved in sand, &c. and be sown in spring in pots of fresh mould, plunging them in the bark-bed: the plants come up the same season; which, when two or three inches in height, should be planted out in separate small pots, and plunged in the bark-bed, supplying them with water, and managing them as other woody plants of the same kind.

As the second sort often branches out low, some of the young shoots may be laid in spring, by slit-laying or wiring, plunging the pots in which they are laid in the tan-bed; when they will probably be well rooted in one year, though it is sometimes two before they strike good root, when they should be potted off into separate pots and be managed as the others.

The last sort is best raised in this way.

The cuttings of some of the short young shoots should be made from such of the plants as afford them, planting them in pots of fresh compost in July, plunging them in the bark-bed, and covering them close with a low hand-glass, giving due water. They mostly take good root the same year, and are fit to plant out in separate small pots in the following spring.

In regard to the general management of these sorts it is only that of keeping them always in the stove, except a month in the heat of summer, when they may be set out in the open air. They should be suffered to shoot nearly in their own way, keeping them, however, to upright stems, and allowing their heads to branch out according to nature, except just reducing the very irregular branches, giving frequent waterings in common with other woody plants of the same kind, and shifting them occasionally into larger pots.

The first species and varieties are highly ornamental for the borders and greenhouse, and the other tender sorts in the stove collections.

MYRTUS *Pimenta*. See PIMENTA.

MYRTUS *Sylvestris*, the wild myrtle, a name given by some authors to *rufcus*, or butcher's broom, from some faint resemblance of its leaves to those of the myrtle.

MYRTUUM MARE, in *Ancient Geography*, a name given by the Greeks to the sea which bathed the Scyllæan promontory, situated S.E. of the Argolide.

MYRUS, in *Ichthyology*. See MURÆNA *Myrus*.

MYS, a name given by *Ælian*, *Appian*, and many others, to the fish called *capricus* by the later writers; the *capros* and *charus* of others of the ancients. See CAPRICUS and GOAT-fish.

MYSA, in *Geography*, a river which rises in Bohemia, on the confines of Bavaria, and discharges itself into the Muldau, near Prague.

MYSECROS, in *Ancient Geography*, a river of Arabia Felix, placed by *Pliny* in the southern part of that province.

MYSHAL, in *Geography*, a small post-town of Ireland, in the county of Carlow, at the foot of mount Leinster. It is 47 miles S. by W. from Dublin.

MYSIA, in *Ancient Geography*, a small country of Asia Minor, is said to have derived its name from the Lydian word *mysos*, signifying a beech-tree, with which tree the country abounded. It was divided, according to *Strabo*, into the Greater and Lesser Mysia. The latter, or Lesser Mysia, lay on the Propontis, and from thence extended to mount Olympus, bounded by Bithynia and the Propontis on the N. and W., by Phrygia Minor on the S., and by Phrygia Major on the E. The Greater Mysia was bounded on the N. by Phrygia Minor, on the S. by *Æolia*, on the E. by Phrygia Major, and on the W. by the *Ægean* sea. What *Strabo* calls Mysia Minor, *Ptolemy* denominates Mysia Major; the former is also named *Olympena*, from mount Olympus, and *Hellepontiacæ*, because some towns anciently belonging to it were seated on the Hellespont. That part of Mysia, which lay between *Ancyra* of Phrygia and the river *Rhyndacus*, is called by *Strabo* *Abrettana*, and the remaining part *Morena*. The former denomination is often given to all Mysia. In the part of Mysia which lay on the Propontis were the following cities, *viz.* *Cyzicus*, *Parium*, and *Lampfacus*, which is still in a tolerable good condition, situated in a pleasant plain, and surrounded with vineyards, that produce excellent wine. The Greeks call it *Lampfaco*, and the Turks *Lepseck*. (See each of these towns respectively.) The Midland Mysia lay between the river *Rhyndacus* and mount *Ida*. Here *Stephanus* places the city of *Apollonia*, on the banks of the *Rhyndacus*, which rises from a lake bearing the name of the city; now called the lake of *Abouillon*, 25 miles in compass and eight miles wide, interspersed with several islands, the largest of which is three miles in circuit, and called *Abouillon*. See APOLLONIA.

The chief rivers of Mysia Minor are the *Rhyndacus* (which see) and the *Granicus*, which rises in mount *Ida*, and discharges itself into the Propontis, below *Parium* and *Cyzicus*. This river was crossed by *Alexander* at the head of 30,000 Macedonians, in face of the Persian army, which was 600,000 strong, and notwithstanding the height and steepness of its banks. It is now called the *Soufoughirli*, the name of a village which it waters. In this part of Mysia stands mount Olympus, called *Olympus Mysiorum*, to distinguish it from several other mountains of the same name. It is one of the highest in Asia, and for a great part of the year covered with snow.

The city of greatest note in Mysia Major was *Pergamus*, which see. On the coast of this Mysia were seated the cities *Andrus*, *Scepsis*, *Assus*, *Adramyttium*, and *Pitane*.

The soil of this country is one of the finest and richest of Asia, and is celebrated as such by the ancients. It abounded in corn and wine, and was well stocked with cattle, and had a great many large plains for pasture. It was plentifully watered with small rivers running down from mount *Ida* and *Olympus*.

As to the origin of the Mysians, *Herodotus* informs us, that they were Lydians by descent. Others derive them from the Phrygians, and tell us that *Myfus*, from whom their name is said to originate, was not a Lydian but a Phrygian. *Strabo* deduces the Asiatic Mysians



sians from those of Europe, inhabiting that part which lies between mount Hermus and the Danube, and is now known under the names of Bosnia, Servia, and Bulgaria. As to the character of the ancient Mysians, it must be considered at different times, for they seem to have been once a warlike people. However in later ages they degenerated from the valour of their ancestors, so as to be looked upon as the most contemptible and insignificant nation on earth; inasmuch that the Greeks had no expression to signify more emphatically a person of no worth or merit than to call him "the last of the Mysians." They were addicted to tears, and on that account employed by the Greeks to attend their funerals and lament over the deceased. Their language was probably the same as the Phrygian and Trojan, with some variation of dialect. Nothing is known concerning their manners, customs, arts and sciences. That they were commercial we may infer from their situation and their wealth; for they are represented by Philostratus as being in ancient times the most opulent nation of all Asia. As to their religion, it was much the same with that of the Phrygians, with whom they vied in superstition. They worshipped the same deities, and used the same religious ceremonies, whence some have concluded that they were originally Phrygians. Cybele had a stately temple at Cyzicus, and there was another dedicated to Apollo Adæus near Parium. Nemesis was also one of their deities; and Priapus was worshipped by the more modern Mysians, but unknown to them even in the time of Hesiod. The Mysian priests abstained from flesh, and were not allowed to marry. Upon their initiation into the priesthood, they sacrificed a horse and ate his entrails. With regard to their government, it was not always monarchical; for no mention of their kings occurs till the Argonautic expedition, though some authors suppose they had them long before that time. After the destruction of Troy, and dispersion of the Trojans, the Mysians took possession of a great part of that country, which they held till they were conquered by Cræsus, king of Lydia. Anc. Un. Hist. vol. iv.

MYRIA was also a small country of the Peloponnesus, in which, according to Pausanias, there was a temple dedicated to the Mysian Ceres.—Also, a town of the Troade, placed by Strabo near Adramyttium.—Also, a town of Parthia, which Ptolemy places between Parbara and Cherax.

MYRIA, *μυρία*, in *Antiquity*, a festival in honour of Ceres, called Myria from Myrius, an Argian, who dedicated a temple to her, in a place about ten stadia distant from Palene, in Achaia; or, according to Plumentus, from *μυρία*, to cloy, satisfy, or be well fed, because Ceres was the first who taught men how to use corn. The festival continued for seven days, upon the third of which all the men and dogs were shut out of the temple, whilst the women, together with the bitches, remained within, performing during the night the accustomed rites; on the following day, they returned to the men, with whom they passed away their time in jesting and laughing together. Potter, *Archæol. Græc.* lib. ii. cap. 20. tom. i. p. 415.

MYSŁOWITZ, in *Geography*, a town of Silesia, in the lordship of Pleß, on the Brzemsä; 15 miles N. of Pleß.

MY SOL, an island in the East Indian sea, of a triangular form, about 100 miles in circumference, governed by a rajah. S. lat. 20°. E. long. 129°.

MYSON, in *Biography*, a native of Sparta, and one of the seven wise men of Greece. When Anacharsis consulted the oracle, in order to know who was the wisest man in Greece, he received a reply, the person who is now ploughing his fields: this was Myson.

MY SORE, or MY SOOR, in *Geography*, a province of Hin-

dooßan, which takes its name from an obscure village, formerly governed by an Hindoo prince. What has been called the kingdom of Myfore comprehends the Myfore Proper, the countries of Bednore, Coimbetore, Canara, and Dindigul, with some others, forming an extent of about 500 miles from N. to S., and where broadest, about 300 from E. to W.; but in some places it is hardly 100, and towards the S. it is narrowed to a point. Accordingly, Myfore on the N. is bounded by the countries of Vissapour and Golconda, on the E. by the Carnatic, on the S. by Madura, Travancore, and Cochin, and on the W. by the Indian sea.

The principality, which in later times has been named Myfore, or Myfoor, says lieut.-col. M. Wilks, was the south-western portion of the Carnatic, frequently named also the country of Canara, or the country in which the Canara language was spoken. According to this criterion, the northern limits of that extensive region commenced near the town of Beder, about 60 miles N.W. from Hyderabad; following the course of this language to the S.E. it is found to be limited by a waving line, which nearly touches Adwanee (Adoni), winds to the W. of Gooti, skirts the town of Anantpoor, and passing exactly through Nundidroog, touches the range of Eastern Ghauts; thence pursuing their southern course to the mountainous parts of Gujjelhutty, it continues to follow the abrupt turn caused by the great chasm of the western hills, between the towns of Coimbetore, Palatchi, and Palgaut; and sweeping to the N.W. skirts the edges of the precipitous Western Ghauts, nearly as far N. as the sources of the Kistna; whence, following first an eastern, and afterwards a north-eastern course, it terminates in rather an acute angle, near Beder, already described as its northern limit. When Hyder Ally was sovereign of Myfore, he extended his possessions. (See *HYDER Ally*.) The dominions of Tippoo Sultan, the successor of Hyder, who styled himself regent of Myfore, commenced on the W. range of mountains beyond Dalmacherry, Sautgul, and Attore; and extended southward to Travancore and Madura; northward to Soonda and Vissapour (enveloping Adoni, the territory of the late Bazalit Jung), north-eastward to Guntoor and Ongola, and westward to the sea. They comprehended, generally, the provinces of Myfore, Bednore, Coimbetore, Canara, and Dindigul; besides his late father's conquests to the northward, which were Merritch, Soonda, Chitteldroog, Harponelly, Sanore, Bancapour, Roydroog, Gooty, Condamore, Canoul, and Cuddapal. The whole extent of Tippoo's territory or kingdom, from the valley of Ootampaliam on the S. to the Kistna on the N., or rather N.N.W., could not be less than 550 British miles; and its breadth, which is very unequal, is in the widest place, or the northern part of the peninsula, at least 330 miles, but in the parallel of Trichinopoly less than 150, and terminating farther southward in a point. Taking the area of Great Britain at 96,400 square British miles, the country of Tippoo might be supposed to contain 21 square degrees, which in the parallel of 14°, produce about 97,650 British miles. The gross revenue of Tippoo has been stated at four crores of rupees, or as many millions sterling. By the peace of 1782, Hyder engaged to relinquish all but his *ancient* possessions. In the year 1792, Tippoo, after several defeats, was compelled to make peace on the humiliating terms of surrendering a great part of his dominions to the English and their allies, on which occasion there were added to the British possessions Barah-Mahal and Dindigul, the Calicut, Palieand, and Coorga countries; and for the due performance of the articles of the treaty, two of the sultan's eldest sons were sent as hostages to the marquis Cornwallis, commander of the British



British army. In 1799, Coimbatore, Canara, and other districts were added; but hostilities did not terminate till the reduction of Seringapatam, capital of Mysore, when Tippoo himself fell. The whole force of Tippoo has been reckoned at 155,000, of which 73,000 were superior to any that have been raised and disciplined in India.

Of the countries that form the south-western parts of Hindoostan, to which our attention has now been directed in this article, Travancore, Malabar, and South Canara, alone escaped Mahometan conquest, until the two latter were invaded by Hyder in 1763-6. The earliest Mahometan army that ever crossed the Kistna was led in 1310-11 against the capital of the sovereign of the Carnatic, about 105 miles N.W. of Seringapatam. In 1326, this capital, called Doormsunmooder, was finally destroyed, and the seat of government removed to Tonoor, better known by the name of Mootee-Talab, or the lake of Pearls, 12 miles N. from Seringapatam. It is needless to relate the romantic origin of the Hindoo house of Mysore: nor are we able to trace the number of generations that subsisted between the founder of this family and Chaw-Rai, whose succession is fixed in 1507. A subsequent rajah made, during his life-time, a partition of his dominions between his three sons, and to one he gave Mysoor, then called Pooragurry. A fort was either first erected or repaired in 1524, to which was assigned the new name of "Mahesh-Asoor," the buffalo-headed monster, usually pronounced Maheshoor, and now contracted to Mysoor. After a succession of rajahs, of whom little is known that is worth detailing, Hyder Ally, in 1759, assumed the government. From this time the rajah became a state prisoner, and died in 1766, and by Hyder's command his son was placed upon the throne. On his death, in 1796, Tippoo declined nominating a successor. The young Mysore rajah, placed on the throne since the capture of Seringapatam, is the only child of Chianon-Rajjee, who had been elected in 1733; and the place of his residence is fixed at Mysore.

MYSOORE, a town and fortified post of the above province, and its ancient capital; about six or eight miles to the southward of Seringapatam.

MYSTAGOGUES, in *Mythology*, a name given to the ministers who performed the principal part in celebrating the *Mysteries*; which see.

MYSTERY, MYSTERIUM, something secret or hidden; impossible or difficult to be comprehended: or, in other words, such a doctrine as exhibits difficulties, and even apparent contradictions, which we cannot solve or explain.

The word comes from the Greek *μυστήριον*; and that, according to some etymologists, from *μύω*, *claudio*, *taceo*, *I shut*, *I am silent*, and *στόμα*, *mouth*; but then whence comes the *r*? Must the *m* in *στόμα* be converted into an *r*? The word seems derived, with more propriety, from the Hebrew *סֵתֶר*, *satar*, *to hide*; whence is formed *מִסְתָּר*, *mistar*, *a hidden thing*.

Mystery is primarily used in speaking of certain truths revealed in Scripture, into the full understanding of which human reason cannot penetrate. Such are said to be the doctrines of the Trinity, the Incarnation, &c.

We have an epitome of the mysteries of faith, or the mysteries of Christianity, in the symbols or creeds said to have been composed by the apostles, the council of Nice, and St. Athanasius. See CREED.

In some of these, mention is made of the mystery of the Trinity; the mysteries of the incarnation of the Son of God, his death and passion, and his descent into hell, for the redemption of mankind; of his resurrection the third day, his ascension into heaven, his sitting on the right hand of God, and his coming again to judge the world; of the divinity and

coequality of the Holy Ghost with the Father and the Son; of the unity of the church; of the communion of saints; the participation of the sacraments; and the general resurrection. Such are the principal mysteries of faith; which the church declares necessary to be known and believed, in order to salvation.

From the earliest ages there have been particular festivals instituted in honour of these mysteries; to return thanks to God for having revealed them. and to oblige the ministers and pastors to instruct the people in them.

Another use of the word, though not so universal at present, is often to be met with in ecclesiastical writers of former ages, and in foreign writers of the present age, which is to signify some religious ceremony or rite, especially those now denominated sacraments. In the communion-office of the church of England, the elements, after consecration, are sometimes termed "holy mysteries." But this use seems not now to be common among Protestants, less perhaps in this country than in any other. Indeed in the fourth, and some succeeding centuries, the word *μυστήριον* was so much in vogue with the Greek fathers, and "mysterium," or "sacramentum," as it was often rendered, with the Latin, that it would be impossible to say in what meaning they used the words; nay, whether or not they affixed any meaning to them at all. In every thing that related to religion, there were found "mysteries" and "sacraments," in doctrines and precepts, in ordinances and petitions; they could even discover numbers of them in the Lord's prayer. Nay, so late as father Possevin, this unmeaning application of these terms has prevailed in some places. That Jesuit is cited with approbation by Walton, in the "Prolegomena," to his "Polyglot," for saying, "Tot esse in Hebraica Scriptura sacramenta, quot literæ; tot mysteria, quot puncta; tot arcana, quot apices;" a sentence which father Simon acknowledges to be to him unintelligible. See the next article.

Such are the feasts of the mystery of the Incarnation, called also Christmas; those of the Circumcision, Passion, Resurrection, &c. See INCARNATION, CIRCUMCISION, EASTER, and EPIPHANY.

The heathens also had their mysteries, particularly those of Ceres (see ELEUSINIA), the *Bona Dea*, &c. The Egyptian priests concealed the mysteries of their religion and philosophy under *hieroglyphics*; which see. Those who revealed the mysteries of the *Bona Dea* were severely punished; and none were trusted with them but those solemnly initiated, and sworn to secrecy.

But these were not called mysteries, as being incomprehensible, or raised above the power of reason; but because they were covered and disguised under types and figures, to raise the greater veneration in the people.—The mysteries of paganism were usually celebrated in caves and grottos, fitter for the concealment of crimes than the celebration of mysteries.

The temples in these secret recesses were so constructed as to favour the artifices of priests. Some vestiges of these subterranean apartments, which by their gloom diffused an air of solemn secrecy, and by the hieroglyphic paintings and sculptures that covered their walls, answered the same purpose, have been discovered by some modern travellers.

Each of the Pagan gods had, says bishop Warburton, besides the public and open, a secret worship paid them; into which none were admitted but those who had been selected by preparatory ceremonies, called initiation. This secret worship was termed the mysteries. The first and original mysteries of which we have any account, were those of Isis and Osiris in Egypt (see EGYPT, ISIS, and OSIRIS); from whence they were derived to the Greeks, under the presidency



dency of various gods, such as the institutor thought most suitable to his purpose. (See BACCHANALIA, ELEUSINIA, GRÆCIA, and ORPHEUS.) In process of time these mysteries were disseminated through the northern and western nations of Europe. See CELTS and DRUIDS.

The learned prelate above named observes, that the nature and end of all these mysteries were the same, *viz.* to teach the doctrine of a future state. He represents the design of them in general to have been, to engage men to a holy and virtuous practice, to give them just notions of religion, and to detect the error of the vulgar polytheism. And he concludes his account of the mysteries with observing, that there were three things about which they were principally concerned: *viz.* 1. The rise and establishment of civil society. 2. The doctrine of a future state of rewards and punishments. 3. The error of polytheism, or the principle of the unity. Which latter was the object of the greater mysteries, in which the whole delusion of paganism was disclosed, and the initiated were instructed, that Jupiter, Mercury, Venus, Mars, and the whole rabble of licentious deities, were only deified mortals; and that God alone was the creator of the universe, who pervaded all things by his virtue, and governed all by his providence: whereas in the lesser mysteries, which were preparatory to the other, the general belief of a providence and future state, and its consequent engagements to a virtuous life, were inculcated. But as these mysteries, according to the bishop's hypothesis, were an institution of the state for the benefit of the people, it is natural to inquire into the reasons of their being kept secret, which, he says, were the following; nothing stimulates curiosity like that which retires from observation, and seems to forbid search; and yet there was a necessity of teaching some things to the initiated, not expedient for others to know; hence he observes, that the secret in the lesser mysteries was some hidden rites and shows, to be kept from the people, only to invite their curiosity; and that the secret in the greater was some hidden doctrines to be kept from the people for the contrary purpose. Besides, as the legislators had been principally concerned in the rise of the vulgar polytheism, this circumstance furnished another reason for the secrecy attending these mysteries. And that these mysteries were invented, established and supported by the legislature, he argues from the place of their origin, which was Egypt, where all religious worship was formed and propagated by statesmen, and directed to political ends, because the sages who brought them out of Egypt, and propagated them in Asia, Greece, and Britain, were all kings or legislators: because the state presided in the mysteries; because, according to their original institution, neither slaves nor foreigners, who had no concern, no property, and no country, were to be admitted into them; because an institution which taught the necessity of a strict and holy life, must be the invention of legislators, to whose scheme virtue and the prospect of immortality were so necessary; and hence they were actually of infinite use to the state; and finally, from the express testimony of Plutarch, who, in his Treatise of Isis and Osiris, ascribes them to this original. However, these mysteries, in process of time, greatly degenerated; one cause of their corruption seems to have been the season in which they were performed, and the profound secrecy observed in them; for the night gave opportunity to wicked men to attempt evil actions; and the secrecy, encouragement to perpetrate them. Another cause of their depravation was their being sometimes under the patronage of those deities who were supposed to inspire and preside over irregular passions, such as Bacchus, Venus, and Cupid; to which the bishop adds the hierophant's with-

drawing himself from the care and inspection of the civil magistrate.

Such is the ingenious and plausible scheme largely discussed and maintained by Dr. Warburton, in his *Divine Legislation*, &c. book ii. sec. 4.

However, other learned writers have advanced a very different opinion on this subject.

Some, who have allowed that the mysteries originated in Egypt, which is the most probable opinion, have ascribed their institution to the priests: who established them, from motives of priestcraft, to aggrandize their order, to extend their influence, and to increase their revenues. Accordingly, they annexed to the observance of them every circumstance that tended to delude the multitude, to gratify their senses and passions, and to promote among them the influence of superstition and enthusiasm. At a subsequent period, it is not at all unlikely that princes and legislators would avail themselves of the advantages which they might derive from these institutions for establishing their own power, and accomplishing their own plans of government. Mosheim, in his edition of "*Cudworth's Int. Syst.*" suggests that the mysteries were altogether commemorative; and that they were established with a view of preserving the remembrance of heroes and great men, who had been deified in consideration of their martial exploits, useful inventions, and public virtues; and more especially in acknowledgment of the benefits conferred by them on their contemporaries. To this purpose, he conceives, that the mysteries of Mithras in particular were instituted. (See *MITHRAS*.) And he ascribes to the same origin the mysteries of the Egyptians, Phœnicians, Greeks, and Etruscans, and indeed all other similar institutions throughout the world. But it does not appear from any historical records, that this design was ever declared and avowed in their original appointment; and we know, that the names and illustrious deeds of the heroes of antiquity were commemorated, with professed intentions, by festivals, games, sacrifices, hymns, and other such institutions, observed in honour of them.

Dr. Leland, in particular, has very accurately examined the origin and ends of the institution of mysteries. According to this writer they seem to have been originally designed to tame and civilize the rude and barbarous people, to form and polish their manners, and by shows and representations, which were fitted to strike the imagination, to bring them to a greater awe and veneration for the laws and religion of their country; which, among the Pagans, was always regarded as a necessary ingredient in a virtuous character. On this account they are highly commended by Cicero, de Leg. lib. ii. cap. 14. as they tended to reclaim men from a rude and savage life; and they were called *initia*, because they furnished the first principles of a human and civilized life. But whatever was the original intention of these mysteries, there is great reason to apprehend, that upon the whole, they proved rather detrimental than advantageous to the cause of virtue; and the corruption of them seems to have been owing to a fundamental defect in their original constitution.—Dr. Leland farther examines whether, and how far the mysteries were designed to detect the error of polytheism, and to instruct the initiated in the knowledge of the one true God. With respect to this point, he maintains, that the whole evidence, produced by bishop Warburton, amounts only to this; that in the mysteries the initiated were instructed that the popular deities had been once men; but no proof is brought, that the *αυτίστης* overthrew the vulgar polytheism, the worship of dead men: nay, the institutors of the mysteries, whilst they taught the initiated, that the gods, commonly received, had been once men, took care that the public religion should not suffer



## MYSTERY.

suffer by it, by letting them know, that, notwithstanding this, they ought to be regarded as gods, and to have that divine worship and honour rendered to them, which ancient tradition and the laws required. The Christians, indeed, argued from the history of the heathen gods to disprove their divinity: and this was probably the reason why the mystagogues were very careful in their entrance on the celebration of the mysteries, that no Christian should be present at them.

Dr. Leland farther contends, that the doctrine of the unity was not taught in the mysteries. With this view he examines the testimonies adduced by the bishop, which, he says, afford no sufficient evidence that they taught the doctrine of the unity. Besides, there is great reason to think, that the notion given of the Deity in the mysteries was not very right and just: and moreover, if they had taught just notions of God, these could be of no great use, because they taught this part of the secret doctrine of the mysteries to very few persons. It is farther urged, that the legislators and civil magistrates, who first instituted the mysteries, and who regarded not truth but utility, could never, in good earnest, attempt to draw the people off from that polytheism, which they themselves had encouraged for the establishment and welfare of the state, and to keep the people under a greater veneration for the laws. And the mysteries seem to have been designed, not to discard the worship of the deities, to whom they were appropriated, but to add a greater solemnity to it. To which it may be added, from fact and experience, that though the mysteries were generally celebrated in almost all the heathen nations, and especially throughout the whole Roman empire, no effect of them appears in turning any of the people from their polytheism or idolatry: nor is it conceivable, if the design of the mysteries were as laudable as Dr. Warburton represents, that the ancient Christian writers should have so universally exclaimed against them. Many of these had been converted from Heathenism to Christianity, and while they were Heathens had been initiated into both the lesser and greater mysteries; so that they were thoroughly acquainted with their nature and design. If they had known that the mysteries obliged those who were initiated to lead a virtuous and holy life, and that they were designed to overturn polytheism, and to proselyte men from the worship of idols to that of the one true supreme God, they must have had a good opinion of them; and in their apologies for Christianity, they would naturally have been induced to speak favourably of them. Whereas, in discourses addressed to the Heathens themselves, they frequently speak of the mysteries in terms of the greatest abhorrence, as impure and abominable, and as tending rather to confirm the people in their idolatry than to draw them from it. On this occasion it will be sufficient to select the testimony of Clemens Alexandrinus, who was a man of learning and probity. From the accounts which he gives from his perfect knowledge of them, it appears, that the representations made in the mysteries were agreeable to the fables of the poets and mythologists, concerning Jupiter, Bacchus, Ceres, Proserpina, and other deities; that in the Eleusinian sacra, they celebrated the rape of Proserpina, the lamentations of Ceres, her wanderings in quest of her daughter, her congress with Jupiter, and supplications to him, with several other particulars, which were both ridiculous and obscene. He calls those who brought these mysteries from Egypt into Greece, "the fathers of an execrable superstition; who sowed the seed of wickedness and corruption in human life;" and says "the mysteries were full of delusion and portentous representations, calculated to impose upon the people." He concludes his account of them by

saying, "these are the mysteries of atheistic men. I may rightly call those atheists, who are destitute of the knowledge of him, who is truly God, and most impudently worship a boy discerped, or torn in pieces by the Titans, a woman lamenting, and the parts which modesty forbids to name." And he repeats it again that they are ignorant of God, and do not acknowledge that God who is or really exists. Clem. Alex. Cohort. ad Gentes, p. 13, 14, 19, 20. Ed. Potter. Eusebius transcribes and approves this description of the mysteries by Clemens. The account which Arnobius, who had been a learned Pagan, gives of the mysteries, particularly of the Eleusinian mysteries, celebrated at Athens, coincides with that of Clemens. In order to evade the force of these testimonies, the learned prelate observes, that the ancient Christian writers bore a secret grudge to the mysteries for their injurious treatment of Christianity at its first appearance in the world; but this apology intimates, that the mystagogues and managers of the mysteries did what they could to uphold the common polytheism and idolatry; and that this was the cause of their enmity to Christianity. They represented the Christians as atheists, because they declaimed against the worship of the publicly adored deities. Whereas if the design of the secret doctrine of the greater mysteries had been to detect the error of the vulgar polytheism, and to teach the initiated that the popular deities were really no gods, the charge might have been retorted upon themselves. Nor is it sufficient to allege with the bishop, that the ancient fathers of the church, after all which they said against them, studiously and formally transferred the terms, phrases, rites, ceremonies, and discipline of these odious mysteries into our holy religion; for the Christians, though they did not consider them as designed to detect and overthrow the popular polytheism, but the contrary, were fully apprized of the veneration that was generally paid to them, and therefore applied to their own use the terms made use of in those mysteries, the better to gain upon the Heathens, and to shew that Christianity did in reality effect that which the Pagan mysteries vainly pretended to do. See Leland's Advantage and Necessity of the Christian Revelation, vol. i. pt. i. c. 9.

MYSTERY, in *Scripture Language*, is used with some latitude. Sometimes it denotes any thing not to be known without divine revelation. It is also used to denote the secret things which God has discovered by his ministers, the prophets, Jesus Christ, and the apostles.

Dr. Campbell, in his "Preliminary Dissertations," observes, that, after the most careful examination of all the passages in the New Testament, in which the Greek word *μυστήριον* occurs, and after consulting the use made of the term by the ancient Greek interpreters of the Old, and borrowing aid from the practice of the Hellenist Jews, in the writings called Apocrypha, he can find only two senses nearly related to each other, which can strictly be called scriptural. The first and leading sense of the word is "arcanum," a secret, any thing not disclosed, not published to the world, though perhaps communicated to a select number. This is totally different from the current sense of the English word "mystery," or something incomprehensible. In the former acceptance, a thing was no longer a mystery than whilst it remained unrevealed; in the latter, a thing is equally a mystery, after the revelation, as before. To the former we apply, properly, the epithet "unknown;" to the latter, we may, in a great measure, apply the term "unknowable." Thus, that God would call the Gentiles, and receive them into his church, was as intelligible, or comprehensible, as that he had once called the descendants of the patriarchs, or as any plain proposition, or historical fact. Yet, whilst undiscovered, or, at least, veiled under figures and types, it remained,



mained, in the scriptural idiom, a "mystery," having been hidden from ages and generations. But, after it had pleased God to reveal this his gracious purpose to the apostles, by his spirit, it was a mystery no longer. The terms communication, revelation, manifestation, connected with that of mystery, and bearing relation to it, plainly shew the import of the term *μυστήριον*, to which they are applied. This is a point that seems to be universally acknowledged by the learned, and therefore it is merely necessary to refer the judicious reader for further proof of it from the New Testament to the following passages, *viz.* Rom. xvi. 25, 26. 1 Cor. ii. 7, 8, 9, 10. Ephes. i. 9. iii. 3, 5, 6. 9. vi. 19. Col. i. 26, 27; in all which it will be plainly perceived, that the apostle treats of something which had been concealed for ages (and for that reason called *μυστήριον*), but was then openly revealed; and not of any thing, in its own nature, dark and inconceivable. According to the usage of the LXX, we shall find that, in the prophecy of Daniel, (ii. 18, 19, 27, 28, 29, 30. 47. iv. 9.) the word *μυστήριον* occurs not fewer than nine times, answering always to the Chaldaic *רָזָא*, *res arcana*, and used in relation to Nebuchadnezzar's dream, which was become a "secret," even to the dreamer himself, as he had forgotten it. In the common version it is uniformly rendered *secret*, and it is found connected with the verbs *γινώσκω*, *βούλιζω*, and *ἀποκαλύπτω*, in a manner similar to the usage of the New Testament already noticed. In the apocryphal writings, the word *μυστήριον* frequently occurs in the same sense, and is used in reference to human secrets, as well as to divine. Indeed, in the New Testament the word is not confined to divine secrets. Thus, the apostle, speaking of the antichristian spirit, says (2 Thess. ii. 7), "the mystery of iniquity doth already work." The spirit of antichrist hath begun to operate; but the operation is latent and unperceived. Both the gospel of Christ and the spirit of antichrist are equally denominated "mystery" or secret, whilst they remained concealed.

It must be allowed, however, that in the doctrines of religion there is something, which is not, in all respects, perfectly comprehensible by us, or with regard to which difficulties may not be suggested, of which we may not be able to give a satisfactory solution. In all sciences, and particularly in natural theology, as well as in revelation, there are many truths of this kind. This acknowledgment is not at all inconsistent with the scriptural acceptance of the word *μυστήριον*, which relates merely to the secrecy for some time observed with regard to any doctrine, whether mysterious, in the modern acceptance of the word, or not. To this purpose we may observe, that the apostles are denominated *οἰκονομοὶ μυστηρίων θεῶν*, *stewards of the mysteries of God* (1 Cor. iv. 1.), *i. e.* dispensers to mankind of the gracious purposes of heaven heretofore concealed, and therefore termed secrets. Thus also our Lord, in the course of his ministry, says to his apostles, "To you it is given to know the mysteries of the kingdom of heaven," *i. e.* no secret, relating to this subject, is withheld from you; "but to them it is not given," *i. e.* not yet given. (Matt. xiii. 41.) For these very apostles were commanded, upon receiving their commission, to disclose to all the world the whole mystery of God, his secret counsels in regard to man's salvation. (Matt. xxviii. 19. Mark, xvi. 15.) We are hence enabled to explain phrases that occur in the epistles, expressing the whole Christian institution, "the mystery of the gospel," "the mystery of the faith," "the mystery of God," and "the mystery of Christ;" mystery, in the singular number, not mysteries, in the plural, which would have been more conformable to the modern import of the word, as relating to the incomprehensibility of the different articles of doctrine. But the whole of the gospel, taken to-

gether, is denominated "the mystery." The grand secret, in reference to the silence, or concealment, under which it was formerly kept; as, in like manner, it is styled the revelation of Jesus Christ, in reference to the publication afterwards enjoined.

In the New Testament the word *μυστήριον* sometimes bears another meaning. It is sometimes employed to denote the figurative sense, as distinguished from the literal, which is conveyed under any fable, parable, allegory, symbolical action, representation, dream, or vision. In this case the term is used comparatively; the meaning being obscure compared with the literal sense. To this import of the term our Lord probably refers (Mark, iv. 11.) when he says to his disciples, "To you it is given to know the mystery of the kingdom of God; but to them that are without, all these things are done in parables." The apostles were let into the secret, and got the spiritual sense of the similitude, whilst the multitude amused themselves with the letter, and searched no further. In this case *μυστήριον* is used Rev. i. 20. xvii. 7. Ephes. v. 32.

Dr. Campbell observes (*ubi supra*), that the earliest perversion of this word *μυστήριον* from its genuine and original sense, a "secret," or something concealed, was the application of it to denote some solemn and sacred ceremony. What led to this use of the term was a resemblance in one particular between some rites of Christian worship and those performed by Heathens in honour of their deities, and denominated from their secrecy mysteries. Although those ceremonies to which we refer, and which were practised in the Christian church, were essentially different from all Pagan rites, yet they so much resembled the latter in the exclusion of the multitude as to give the Heathens occasion to style them the Christian mysteries. The term would probably be first applied, in this sense of it, to what was called in the primitive church "the Eucharist," or as it is now denominated "the Lord's supper," and afterwards extended to "baptism," and other sacred ceremonies. The name seems to have originated with the Heathens, and in process of time was adopted by Christians themselves. (See SACRAMENT.) One passage has been mentioned in which the word *μυστήριον* seems to have been used in the modern sense of the English word *mystery*, and to denote something which, though revealed, is inexplicable, and, to human faculties, unintelligible. The words are, "Without controversy great is the mystery of godliness, &c." (1 Tim. iii. 16.), which, as they occur in our version, differ from the reading of the two most ancient versions, the Syriac and the Vulgate, and some of the oldest MSS. The purport of this sentence is conformable to the sense above given of the term *μυστήριον*; and it is plainly this, "Great unquestionably is the divine secret, of which our religion brings the discovery, &c."

A popular preacher of the last century, after observing that a mystery, in the Scripture sense of it, is a thing that natural reason could not discover, and, consequently, which must have been unknown, if God had not revealed it, nevertheless acknowledges, that of this kind there are several doctrines, in the Christian religion: before the revelation was given they were mysteries; but cease to be mysteries now they are revealed. To this purpose he cites Mark, iv. 11. Rev. xvi. 25. 1 Cor. xv. 51. Hence this writer infers, that mysteries, *i. e.* things which reason cannot discover, and which are not revealed, are, according to the language of Scripture (Deut. xxix. 29) "the secret things that belong to God," and what we have nothing at all to do with; or, in other words, though certain things are parts of our religion that *were* mysterious, it is not our duty to believe or practise any thing that is *still* a mystery. To believe doc-



trines that are *still* mysterious is to believe without *ideas*, to believe what we know nothing of; but this, in the nature of the thing, is *impossible*. We may indeed, he allows, believe that there is *some general truth* contained in propositions which we do not understand, and so far our faith may be rational, because we know what we believe; but of the propositions themselves we can believe nothing *particularly*, because we understand nothing: nor can greater dishonour be done to the infinite wisdom of God than by supposing that he has made it a part of our religious obligation only to believe in general, that there is some truth disguised under unintelligible terms, to which we have no ideas. For this is making no *revelation* at all, but leaving things in absolute darkness. And if we examine the doctrines of the Christian religion, we shall find in fact, says this writer, that they are plain and easy truths, and that as we cannot in *reason*, we are not obliged by *revelation*, to carry our faith one jot beyond our understanding. If it should be said, that we cannot account for the *manner* of God's creating the world, or for the *manner* in which he exists every where, of the general resurrection, and the like, this author replies, that it is no part of our *religion* to account for it.—“Where the *mystery* begins, *religion* ends.” Does the most warm and forward *enthusiast* pretend to believe more than that those things are true? Does he believe any thing at all with respect to the *manner* of them? Nay, is not his urging that it is mysterious and incomprehensible a demonstration, that he, *himself*, knows, he can believe nothing *particularly* about it? It is yet more strange to talk of *mysterious* precepts than of unintelligible doctrines; for laws that are not *understood* can, most certainly, never be obeyed.” It is indeed very surprising,” as this author proceeds, “that mankind, in all ages, have been so *fond* of mysteries; that the *crafty* and *designing*, who make a gain of the credulity of the multitude, should use all their art and interest to propagate them, is indeed natural enough; but why should the more *honest* and *disinterested* part of the people plead so zealously for them? Whence comes it to pass, that when they choose to see their way plain before them in all other cases, they should affect to be *without light* in matters of religion? Religion is of vastly greater importance than the common affairs of life, and this they readily acknowledge; and yet they seem to like it the *better*, the *less* they understand it. Such a conduct is very unaccountable, because there can, one would think, be no motive to it.—Mysteries yield neither *pleasure* nor *profit*.—For as, with respect to the works of *nature*, all our pleasure arises from the *perception* of beauty, harmony, and usefulness; and however we may imagine innumerable *secret* beauties which we have not discovered, yet until they are *known* they afford no *real satisfaction*, nor can we reap any *advantage* from them; it is just the same with respect to mysteries in *religion*; we can neither be delighted nor *profited* by them because we do not understand them, *i. e.* in other words, they are really *nothing at all* to us.—Nay we cannot so much as *admire* them; because admiration necessarily supposes, that we have a knowledge of the *grandeur*, or of the *worth* and *excellency* of the object. The utmost that can be said therefore is, that we are *confounded* and *puzzled*.—And is there any pleasure in that, or any advantage merely in being in the *dark*, and having *no ideas*?

However, if this were all, a man would only prove himself a *weak* (and might at the same time be an *innocent*) enthusiast, by supposing things that are, in truth, *nothing* to him, to be important parts of revelation. But when mysteries are propagated with zeal, and imposed on conscience, when for the sake of what is allowed to be *incomprehensible*, the plain and indispensable obligations of justice and charity are

infringed and violated (of which the history of the Christian church, in almost every age, affords many flagrant examples) it is then our duty to oppose an error which makes *religion* contemptible, and strikes at the foundation of *Christianity*, and, indeed, of all *good morals*. And this cannot be so effectually done as by shewing that there are no mysteries in religion, and that of what we do not understand, we cannot know whether it be good for any thing or no; it is in fact useless, and does not deserve our zeal; nor if we did understand it, would that alone be sufficient, unless it was a doctrine of some importance to the cause of virtue, and the happiness of mankind, and consequently worthy of God. “I shall only add, that there is a great difference between a *mystery*, and a direct *absurdity* and *contradiction*, such as *transubstantiation* and *other doctrines* which have been screened under that more venerable name; for mysteries are only things that we certainly know *nothing at all* of, the other things that we certainly know to be *false*;—the former we only *do not* understand, the latter we see *cannot* be understood.” Foster's Sermons, vol. i. serm. 7.

Although we may reasonably be required to believe, on the unquestionable evidence of divine testimony, doctrines which we cannot adequately comprehend and satisfactorily explain, and to comply with precepts, as rules of conduct on the authority that enjoins them, the design and use of which we do not clearly perceive, at least, when they are first proposed, we can never admit the rant, as Dr. Watts has properly called it, of Tertullian, “credo, quia impossibile est,” I believe because it is impossible; nor undertake to vindicate the language of the celebrated lord Bacon, who says that “we must not submit the mysteries of faith to our reason,” or to concur with an eminent prelate (the late Dr. Hurd) in his description of certain doctrines “at which reason stands aghast, and faith herself is half confounded,” and which, according to the expression of another pious bishop (Beveridge) “would be ridiculed as absurdities, if they were not to be adored as mysteries.”

Mathematicians have been accused of introducing mysteries in geometry, which ought to have none. See the *Analist*; and Mr. Maclaurin's *Fluxions*, in the Introduction and other places. See also PARADOX.

MYSTERY, in *English Antiquity*, is a term formerly applied to our dramatic exhibitions. It is well known, says Mr. Percy, in his *Reliques of Ancient English Poetry*, that dramatic poetry in this and most other nations of Europe owes its origin, or at least its revival, to those religious shows, which in the dark ages were usually exhibited on the more solemn festivals. At those times they were wont to represent in the churches the lives and miracles of the saints, or some of the more important stories of Scripture. And as the most mysterious subjects were frequently chosen, such as the incarnation, passion, and resurrection of Christ, &c. these exhibitions acquired the name of *miracles* and *mysteries*. Spectacles of this kind under the denomination of miracles, were known in England for more than two centuries before the reign of Edward II. Matthew Paris, who wrote about the year 1240, says, that they were such as “*Miracula vulgariter appellamus*,” but we learn from Chaucer, that in his time “plays of miracles” were the common resort of idle gossips in Lent. These miracle-plays, or mysteries, were the first of our dramatic exhibitions. At first they were probably a kind of dumb shows, intermingled, perhaps, with a few short speeches: at length they grew into a regular series of connected dialogues, formally divided into acts and scenes. Specimens of these, in their most improved state, may be seen in Dodley's *Old Plays*, and in Osborne's *Harleian Miscellany*. As the old mysteries frequently



frequently required the representation of some allegorical personage, such as Death, Sin, Charity, Faith, Hope, and the like, by degrees the rude poets of these unlettered ages, towards the fifteenth century, began to form complete dramatic pieces, consisting entirely of such personifications. These they entitled moral plays, or *moralitys*. The mysteries were very inartificial, representing the Scripture stories singly according to the letter. But the moralitys are not devoid of invention; they exhibit outlines of the dramatic art; containing something of a fable or plot, and even attempting to delineate characters and manners. From hence the gradual transition to real historical personages was natural and obvious. It may be also observed, that many licentious pleasantries, of which neither the writers nor the spectators perceived the impropriety, were sometimes introduced in these religious representations. This might imperceptibly lead the way to subjects entirely profane, and to comedy, and perhaps at an earlier period than is generally imagined.

In France all dramatic pieces were indiscriminately called "mysteries," whether a martyr, or a heathen god, whether St. Catharine or Hercules was the subject. In that country, the religious mysteries, often called "Piteaux," or "Pitoux," were very fashionable, and of high antiquity, though not more ancient than those of the English. The French mysteries were chiefly performed by the religious communities. In France, as well as in England, it was customary to celebrate the feast of the boy-bishop, during which "moralitys" were presented, and shows of "miracles," with farces and other sports, but compatible with decorum, both in France and in England. See *Boy-Bishop*.

Mr. T. Warton, in the second volume of his "History of English Poetry," has introduced some discussions with regard to the probable causes of the rise of the "mysteries." "About the eighth century," he says, "trade was principally carried on by means of fairs, which lasted several days. Charlemagne established many great marts of this sort in France; as did William the Conqueror, and his Norman successors, in England. The merchants, who frequented these fairs in numerous caravans or companies, employed every art to draw the people together. They were therefore accompanied by jugglers, minstrels, and buffoons; who were no less interested in giving their attendance, and exerting all their skill, on these occasions. As now but few towns existed, no public spectacles or popular amusements were established; and as the sedentary pleasures of domestic life and private society were yet unknown, the fair-time was the season for diversion. In proportion as these shows were attended and encouraged, they began to be set off with new decorations and improvements; and the arts of buffoonery, being rendered still more attractive by extending their circle of exhibition, acquired an importance in the eyes of the people. By degrees the clergy, observing that the entertainments of dancing, music, and mimicry, exhibited at these protracted annual celebrities, made the people less religious, by promoting idleness and a love of festivity, proscribed these sports, and excommunicated the performers. But finding that no regard was paid to their censures, they changed their plan, and determined to take these recreations into their own hands. They turned actors; and instead of profane mimicries, presented stories taken from legends in the bible. This was the origin of sacred comedy. The death of St. Catharine, acted by the monks of St. Dennis, rivalled the popularity of the professed players. Music was admitted into the churches, which served as theatres for the representation of holy farces. The festivals among the French, called "La Fête de Foux, de

'l'Ane,' &c. and "Des Innocens," at length became great favourites, as they certainly were more capricious and absurd, than the interludes of the buffoons at the fairs. These are the ideas of a judicious French writer, now alive, who has investigated the history of human manners with great comprehension and sagacity." Our author adds, "Voltaire's theory on this subject is also very ingenious, and quite new. Religious plays, he supposes, came originally from Constantinople; where the old Grecian stage continued to flourish in some degree, and the tragedies of Sophocles and Euripides were represented, till the fourth century. About that period, Gregory Nazianzen, an archbishop, a poet, and one of the fathers of the church, banished Pagan plays from the stage at Constantinople, and introduced select stories from the Old and New Testament. As the ancient Greek tragedy was a religious spectacle, a transition was made on the same plan: and the chorusses were turned into Christian hymns. Gregory wrote many sacred dramas for this purpose, which have not survived those inimitable compositions over which they triumphed for a time: one, however, his tragedy called *Χριστος πασχω*, or, "Christ's Passion," is still extant. In the prologue it is said to be in imitation of Euripides, and that this is the first time the Virgin Mary has been produced on the stage. The fashion of acting spiritual dramas, in which, at first, a due degree of method and decorum was preserved, was at length adopted from Constantinople by the Italians; who framed, in the depth of the dark ages, on this foundation, that barbarous species of theatrical amusement called "mysteries," or sacred comedies, and which were soon afterwards received in France." This opinion is supposed, by Mr. Warton, to derive confirmation from the early commercial intercourse that subsisted between Italy and Constantinople. In further defence of this hypothesis, it may be observed, that the "Feast of Fools," and "of the Ass," together with other religious farces of that sort, so common in Europe, originated in Constantinople. They were instituted, though perhaps under other names, in the Greek church, about the year 990, by Theophylact, patriarch of Constantinople, probably with the design of weaning the minds of the people from the Pagan ceremonies, particularly the bacchanalian and calendary solemnities, by the substitution of Christian spectacles, partaking of the same spirit of licentiousness. This practice was subsisting in the Greek church 200 years afterwards. We may here remark, that in the fourth century it was customary to make Christian parodies and imitations in Greek, of the best Greek classics, for the use of the Christian schools. This practice prevailed much under the emperor Julian, who forbade the Pagan poets, orators, and philosophers, to be taught in the Christian seminaries. Apollinaris, bishop of Laodicea, wrote Greek tragedies, adapted to the stage, on most of the grand events recorded in the Old Testament, after the manner of Euripides. On some of the familiar and domestic stories of Scripture, he composed comedies in imitation of Menander. He wrote Christian odes on the plan of Pindar. In imitation of Homer, he wrote an heroic poem on the history of the bible, as far as the reign of Saul, in twenty-four books. Mr. Warton mentions a much earlier and more singular specimen of a theatrical representation of sacred history than that which is mentioned by Voltaire. Some fragments of an ancient Jewish play in the "Exodus," or departure of the Israelites from Egypt under their leader and prophet Moses, are yet preserved in Greek Iambic. The principal characters of this drama are Moses, Sapphira, and God speaking from the burning bush. Moses delivers the prologue, or introduction, in a



speech of sixty lines, and his rod is turned into a serpent on the stage. The author of this piece is Ezekiel, a Jew, who is called the tragic poet of the Jews; and, according to Huetius, he lived at least before the Christian era. Some say, that he was one of the LXX, under the reign of Ptolemy Philadelphus. Warton thinks, that he composed this play after the destruction of Jerusalem, and in the time of Baruchas, as a political spectacle, with a view of animating his dejected countrymen with the hopes of a future deliverance from their captivity under the conduct of a new Moses, like that from the Egyptian servitude. See Clem. Alex. lib. i. Strom. Eusebius Præp. Evang. cap. 28, 29. Eustathius ad Hex. The above-mentioned fragments are collected and translated into Latin by Fr. Morellus, Paris, 1580. See also Corpus Poet. Gr. Tragicæ & Comicæ, Geneva, 1614, fol. Poet. Christ. Græc. Paris, 1609, 8vo. Scaliger ad Euseb. and Euseb. Demonstr. Evang.

Boileau, on the authority of Menestrier, seems to think that the ancient pilgrims, on their return from Jerusalem, introduced these sacred exhibitions into France, among whom are reckoned St. James of Compostella, St. Bourne of Provence, St. Reine, &c. &c. who composed songs on their adventures; intermixing recitals of passages in the life of Christ, descriptions of his crucifixion, of the day of judgment, of miracles, and of martyrdoms. To these tales, which were recommended by a pathetic chant, and a variety of gesticulations, the credulity of the multitude gave the name of "Visions." These were recited by the pious itinerants, with accompaniments which formed a sort of theatrical spectacle. At length their performances excited the compassion and charity of some citizens of Paris, who erected a theatre for their exhibition of these stories, with the additional advantage of scenery and other decorations. At length professed practitioners in the histrionic art were hired to perform these solemn mockeries of religion, which soon became the principal public amusement of a devout but undiscerning people.

Upon the whole, Mr. Warton concludes with observing, that the "mysteries" appear to have originated among the ecclesiastics; and were probably first acted, at least with any degree of form, by the monks. This was certainly the case in the English monasteries. As learning increased, and was more widely disseminated from the monasteries, the practice migrated to schools and universities, which were formed upon the monastic plan: and it is well known, that the practice of acting Latin plays in the colleges of Oxford and Cambridge continued until Cromwell's usurpation. Many instances of its occurrence in schools and seminaries of an inferior nature, both in England and France, might be enumerated; and it has been perpetuated to the present day.

MYSTERY, *Additions of.* See ADDITION.

MYSTES. See HYDROMYSTES.

MYSTIC THEOLOGY denotes a refined and sublime kind of divinity, professed by the mystics.

It consists in a knowledge of God, and divine things, not acquired in the common way, but infused immediately by God, and which has the power to move the soul in an easy, calm, devout, affecting manner; to unite it ultimately to God; to illumine the understanding, and to warm and enliven the will in an extraordinary manner.

Among the writings attributed to Dionysius the Areopagite, is a discourse of "Mystic Theology." Several others have written on the same subject, both ancients and moderns. See THEOLOGY.

MYSTICAL, *μυστικός*, *Mystic*, something mysterious, or allegorical. See MYSTERY, ALLEGORY, &c.

The commentators on the Scripture, besides a literal, find also a mystical, and a moral meaning. The bible, they contend, is a book written both withinside and withoutside: withinside, in respect to the mystical, internal, sublime, and hidden sense; and withoutside, in respect to the literal and grammatical sense immediately expressed by the words.

Indeed, several of the ancient fathers, and doctors of the church, understand the books mentioned in Ezek. ii. 10. and in the Apocalypse, v. i. *which were written both withinside and without*, of the Scriptures; and take the literal and mystical sense to be here fairly intimated.

The sense of Scripture, say they, is either that immediately signified by the words and expressions in the common use of language: or it is mediate, sublime, typical, and mystical; wherein the things themselves signified are made to signify still other and farther things, according to the particular design and intention of God, and of the prophets and apostles inspired by him.

The literal sense they again divide into *proper* literal, which is contained in the words taken simply and properly: and *metaphorical* literal, where the words are to be understood in a figurative and metaphorical sense; as, *where the right eye is commanded to be plucked out*, &c.

Wherever the proper literal sense contains any thing absurd or indecent, there recourse must be had to the metaphorical literal sense.

All Scripture has a true literal sense, but it has not always a mystical one. We must ever understand it in the literal sense, when it speaks immediately of any of the laws of nature, of charity, of doing good; when it gives us instructions for the conduct of life, for regulating our manners; and when it relates any matter of fact, or point of history.

The same passage of Scripture has sometimes several senses, expressed and signified immediately by the words taken in their proper, and their figurative sense, and which appear to have been all intended, by the inspired person who spoke them, as having been so understood by others likewise inspired. As those words in Psalm ii. *Thou art my son, this day have I begotten thee*; which St. Paul understands, according to the strict letter, in Heb. i. 5. of the generation of Jesus Christ in time; and in Acts, xiii. 33. he takes them in a metaphorical sense, and applies them to our Saviour's resurrection. Thus, in Hosea, xi. 1. the words of the prophecy, *I have called my son out of Egypt*, are understood literally of the children of Israel, whom God brought out of Egypt, under the conduct of Moses; and yet in Matt. ii. 15. they are understood metaphorically of Jesus Christ. See ACCOMMODATION and PROPHECY.

The mystical sense of Scripture is that which the things expressed by the words do farther signify; or it is a second signification held forth and signified by the first: this second being expressed immediately by the first; and mediately by the words themselves.

Some writers allow of three kinds of mystical senses in the word of God: the first corresponding to faith, and called *allegorical*; the second to hope, called *anagogical*; and the third to charity, called the *tropological* sense.

The four senses, and their applications, are included in the Latin distich:

"Littera gesta docet, quid credas allegoria,  
Moralis quid agas, quo tendas anagogia."

Sometimes the same word in Scripture is to be taken in all the four senses. Thus the word *Jerusalem* literally signifies the capital of Judea; allegorically, the church militant;

tant;



tant; topologically and morally, a believer; and anagogically, heaven.

So that passage in Genesis, *Let there be light, and there was light*, signifies, according to the letter, corporal light; by the allegory, the Messiah; in the topological sense, grace; and anagogically, beatitude, or the light of glory.

MYSTICAL Poetry, which is a figurative mode of expressing the fervour of devotion, or the ardent love of created spirits towards their beneficent Creator, has prevailed from time immemorial in Asia; particularly among the Persian theists, both ancient Hufhangis and modern Sufis, who seem to have borrowed it from the Indian philosophers of the Vedanta school (see VEDANTA); and their doctrines are also believed to be the source of that sublime, but poetical, mythology, which glows and sparkles in the writings of the old academics. (See ACADEMICS.) "Plato travelled into Italy and Egypt," says Claude Fleury, "to learn the theology of the Pagans at its fountain head." Its true fountain, however, was neither in Italy nor in Egypt, (though considerable streams of it had been conducted thither by Pythagoras, and by the family of Misra,) but in Persia or India, which the founder of the Italic sect had visited with a similar design. (See ITALIC SECT.) What the Grecian travellers learned among the sages of the East hath not been fully explained; but they seem to have adopted and introduced to their disciples a singular species of poetry, which consists almost wholly of a mystical religious allegory, though it appears, on a transient view, to contain only sentiments of a wild and voluptuous libertinism. Now, admitting the danger of a poetical style, in which the limits between vice and enthusiasm are so minute as to be hardly distinguishable, we must beware of censuring it severely, and must allow it to be natural, though a warm imagination may carry it to a culpable excess. An ardently grateful piety is congenial to the undepraved nature of man, whose mind, sinking under the magnitude of the subject, and struggling to express its emotions, has recourse to metaphors and allegories, which it sometimes extends beyond the bounds of cool reason, and often to the brink of absurdity. Passages might be selected from the eminent Dr. Barrow's sermon "Of the Love of God," (Works, vol. i. ferm. xxiii.) bordering, indeed, on quietism and enthusiastic devotion, which differ only from the mystical theology of the Sufis and Yogis, as the flowers and fruits of Europe differ in scent and flavour from those of Asia; or as European differs from Asiatic eloquence. The same strain, in poetical measure, would rise up to the odes of Spenser, "On Divine Love and Beauty," and in a higher key, with richer embellishments, to the songs of Hafiz and Jayadeva, the raptures of the Mesnevy, and the mysteries of Bhagavat. See SUFI, YOGI, JAYADEVA, MESNEVY, and SRI BHAGAVAT.

Another specimen of more modern date might be selected from a late work of the celebrated M. Necker, which would serve to exhibit the similarity of European theology to that of the Persians and Indians, but want of room obliges us to omit it.

If the passages to which we have referred were translated into Sanscrit and Persian, the Vedantis and Sufis would consider them as an epitome of their common system; for they concur in thinking, that the souls of men differ infinitely in degree, but not at all in kind, from the divine spirit of which they are particles, and in which they will ultimately be absorbed; that the spirit of God pervades the universe, always immediately present to his work; and that he alone is perfect benevolence, perfect truth, perfect beauty; that the love of him alone is real and genuine love, while that of all other objects is absurd and illusory; that the beauties of nature are faint

resemblances, like images in a mirror, of the divine charms; that from eternity without beginning to eternity without end, the supreme benevolence is occupied in bestowing happiness, or the means of attaining it; that men can only attain it by performing their part of the *primeval covenant* between them and the Creator; that nothing has a pure absolute existence, but *mind* or *spirit*; that *material substances*, as the ignorant call them, are no more than gay pictures presented continually to our minds by the sempiternal artist; that we must beware of attachment to such phantoms, and attach ourselves exclusively to God, who truly exists in us, as we exist solely in him; that we retain, even in this forlorn state of separation from our beloved, the idea of heavenly beauty, and the remembrance of our *primeval vows*; that sweet music, gentle breezes, fragrant flowers, perpetually renew the primary idea; refresh our fading memory, and melt us with tender affections; that we must cherish those affections, and by abstracting our souls from *vanity*, that is, from all but God, approximate to his essence, in our final union with which will consist our supreme beatitude.

From these principles flow a thousand metaphors and poetical figures, which abound in the sacred poems of the Persians and Hindoos, who seem to mean the same thing in substance, and differ only in expression, as their languages differ in idiom.

Some theologians have supposed, that the reciprocal love between pious men and their benevolent Creator, which Barrow describes with a glow of expression perfectly oriental, is that which our most orthodox theologians believe to have been mystically shadowed in the Song of Solomon, while they admit, that, in a literal sense, it is an epithalamium on the marriage of the sapient king with the princess of Egypt. The very learned author of the prelections on sacred poetry, declared his opinion that the canticles were founded on historical truth, but involved an allegory of that sort, which he named *mystical*; and the beautiful Persian poem on the loves of Laili and Majnun, by the inimitable Nizami, (to say nothing of other poems on the same subject,) is indisputably built on pure history, yet avowedly allegorical and mysterious, for the introduction to it is a continued rapture on *divine love*; and the name of Laili seems to be used in the Mesnavi, and in the odes of Hafiz, for the omnipresent spirit of God.

It is still a question whether the poems of Hafiz must be taken in a literal or figurative sense; but the question does not admit of a general and direct answer; for even the most enthusiastic of his commentators allow that some of them are to be taken literally, and his editors ought to have distinguished them, as our Spenser has distinguished his four odes on Love and Beauty, instead of mixing the profane with the divine, by a childish arrangement according to the alphabetical order of the rhymes. Hafiz never pretended to more than human virtues, and it is known that he had human propensities, for some amorous frolics of his youth are on record, and are, indeed, alluded to in his odes. After his juvenile passions had subsided, we may suppose that his mind took that religious bent which appears in most of his compositions. Several distichs might be selected from different odes, that relate to the mystical theology of the Sufis, if it were consistent with the limits to which this article must be restricted.

A volume might be filled with passages of a similar kind to those that occur in the works of the writers already mentioned, from the Sufi poets; from Saib, Orfi, Mir Khofrau, Jami, Hazin, and Sabik, who are next in beauty of composition to Hafiz and Sadi, but next at a considerable distance; from Meshi,

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the most elegant of their Turkish imitators; from a few Hindoo poets of our own times, and from Ibnub Fared, who wrote mystical odes in Arabic.

This notice of the mystical poets of the Asiatics, is taken from an essay on that subject in vol. iii. of the *Asiat. Ref.* by sir W. Jones. It is introductory to a translation of the *Gita Govinda*, some account of which curious poem is given under *JAYADEVA*, the name of its author. An extract from it is given under *KRISHNA*.

It is easier to account for the rhapsodies of the mystics of the East and West, than wholly to defend them. Some have doubtless derived spiritual consolation from such illusions, but a greater number must have been misled thereby to their own discomfort; and it might be as well if such extacies were confined to the breast which engenders them. On the whole, such warmth of sentiment and expression appears not deserving of commendation: although, on the other hand, it seems not to require such forcible reprehension, as some of our pious divines have seen fit to stigmatize it with.

Dr. Watts, of whom Dr. Johnson said, "he was a man who never wrote but for a good purpose," acknowledges that in his early writings he gave into the track of those who express the fervours of devout love to our Saviour, in the style of the Song of Solomon; but in maturer age he disapproved of it. But he did not, like some other well-meaning writers, apply to it such epithets as "secret pantings after mortal love"—"mystical dissoluteness"—"spiritualized concupiscence, invented by carnal and wanton appetites, polluting the soul with luscious images," &c. The middle course here, as in most other warmly contested points, seems the safest.

We shall close this article with some judicious observations of an anonymous writer. (*Quarterly Rev.* N° x.) He describes mystical poetry to be that in which the various workings of the religious passion are typified by the hope and fears of an amatory attachment; a style of composition, which has, in all ages, captivated the luxurious imagination of Oriental rhapsodists. It is very possible for mystical poetry to be in fact, as it is in profession, devotional; but by many of those who have cultivated it, the veil of sanctity has, unquestionably, been employed, like the secrecy and seclusion of the ancient mysteries, only to conceal the indulgences which it was ostensibly designed to exclude. The hierophant has lighted his altar with fires, not only less holy than those of heaven, but less *vestal* than the chaste though cold flame of fancy: and for histories of devotion, in the disguise of love, have been substituted histories of love in the disguise of devotion. If, in some cases, this abuse has been the effect of design, in others, the poet, instead of intending to deceive, has in effect deceived himself; and, perhaps, has been the only person deceived. On the whole, therefore, this is a style of which the general use can scarcely be encouraged; and which, even where there exists the most unexceptionable purity of purpose, can be managed only by a firmness and delicacy of hand, rarely possessed in combination.

**MYSTICETUS**, in *Zoology*, a species of *Balena*; which see. The mysticetus, or common whale, has the nostrils flexuous, or much contorted, and situated in the middle of the fore-part of the head, and the back without fin. Of this species there are the following varieties:  $\alpha$ . *B. Mysticetus groenlandica*, or Greenland common whale, which is of a blackish colour on the back, and white on the belly:— $\beta$ . *B. Mysticetus islandica*, or Iceland common whale, of a black colour with a whitish gloss:— $\gamma$ . *B. Mysticetus major*, or larger common whale, which has no spiracle.

The common whale inhabits the Arctic seas, especially about Greenland and Spitzbergen: it is of enormous bulk, measuring from 50 or 60, to 70, 80, and even 100 feet in length: it swims with great velocity, and yet, notwithstanding its immense size, having no weapons either of offence or defence, it is exceedingly shy and timid. It subsists chiefly on the cancer pedatus and oculatus, argonauta arctica, and clio bitentacula: the second, or Iceland variety, which is smaller and more slender than the Greenland kind, feeds on medusæ and clupeæ. It is probable, that the description of the third variety, or larger common whale, as being without any spiracle, which is admitted by Ray, on the authority of Sibbald, is either totally erroneous, or founded on mistake, as it differs so completely from the general analogy of the whale genus, as well as from the whole cetaceous order. The female whale has two proportionally small paps situated on the abdomen near the vagina, which she has the power of retracting; she is supposed to go nine or ten months with young, and produces mostly one, seldom two, at a time, which she suckles and takes care of with great affection. The flesh of the whale is extremely dry and insipid, except about the tail, which is more juicy, yet still very tasteless: between the skin and the flesh the whole body is surrounded with a vast layer of fat or blubber, of which 70 or 80 butts, or large barrels, are sometimes procured from one whale. Whales are hunted with great eagerness, on account of this blubber, for the sake of a coarse oil, which is extracted from it; and it appears that this trade was considerable in the time of Ilidore and Vincentius, it being mentioned as common and very profitable on the French coast by Brito, a poet of the 12th century.

The horny laminæ, which are found in the upper jaw of the whale, are likewise a valuable article of commerce, under the name of "whale-bone;" these, from frequent use, serving to catch the food of the animal, are split at the margin and the extremity into long, thick bristles; there are about 700 laminæ of this substance in the mouth of each individual, and when the animal is full grown, the middle lamina, which is the longest, measures from eighteen to twenty feet in length.

The head of the common whale is nearly one-third part of the animal, being flattish on the upper part, and surmounted by a tubercle or projection, in which the spiracle, or breathing-pipe, is situated; the mouth is very large, and stretches far backwards, almost as far as the eyes, in form of the letter S; the lower jaw, especially about the middle, is very broad; the tongue is very soft, being composed almost entirely of fat; it is of a white colour, spotted with black at the sides, and adheres by its under surface to the lower jaw; the eyes are placed at a great distance from each other, on the sides of the head, over the entrance to the ears, and are very little larger than those of an ox; the skin is about an inch thick, and the scarf-skin about the thickness of parchment: this last is very smooth, seldom entirely black, or variegated with black and yellow; and very rarely of a white colour; the tail is horizontally flattened, and slightly divided into two lobes, from the middle of which a short, and somewhat sharp, angular ridge runs up to the middle of the back, but without any proper dorsal fin.

**MYSTICS**, **MYSTICI**, a kind of religious sect distinguished by their professing pure, sublime, and perfect devotion, with an entire disinterested love of God, free from all selfish considerations.

The Mystics, to excuse their fanatic extacies, and licentious



tious extravagancies, allege that passage of St. Paul, "The Spirit prays in us by sighs and groans that are unutterable." Now, if the Spirit, say they, pray in us, we must resign ourselves to its motions, and be swayed and guided by its impulse, by remaining in a state of mere inaction.

Passive contemplation is that state of perfection to which the Mystics all aspire. See QUIETISM.

The authors of this mystic science, which sprung up towards the close of the second century, are not known; but the principles from which it was formed are manifest. Its first promoters argued from the known doctrine of the Platonic school, which was also adopted by Origen and his disciples, that the divine nature was diffused through all human souls, or that the faculty of reason, from which proceed the health and vigour of the mind, was an emanation from God into the human soul, and comprehended in it the principles and elements of all truth, human and divine. They denied that men could, by labour or study, excite this celestial flame in their breasts, and, therefore, they disapproved highly of the attempts of those, who, by definitions, abstract theorems, and profound speculations, endeavoured to form distinct notions of truth, and to discover its hidden nature. On the contrary, they maintained that silence, tranquillity, repose, and solitude, accompanied with such acts as might tend to extenuate and exhaust the body, were the means by which the internal word was excited to produce its latent virtues, and to instruct men in the knowledge of divine things. For thus they reasoned; those who behold with a noble contempt all human affairs, who turn away their eyes from terrestrial vanities, and shut all the avenues of the outward senses against the contagious influences of a material world, must necessarily return to God, when the spirit is thus disengaged from the impediments that prevented that happy union. And in this blessed frame they not only enjoy inexpressible raptures from their communion with the Supreme Being, but also are invested with the inestimable privilege of contemplating truth undisguised and uncorrupted, in its native purity, while others behold it in a vitiated and delusive form.

Towards the close of the fifth century, the Mystics, pretending to higher degrees of perfection than other Christians, drew every where to their party, particularly in the eastern provinces, a vast number of the ignorant and inconsiderate multitude, by the striking appearance of their singular and austere piety. It is impossible to describe the rigour and severity of the laws which these senseless fanatics imposed upon themselves, in order, as they alleged, to appease the Deity, and to deliver the celestial spirit from the bondage of this mortal body. They not only lived among the wild beasts, but also lived after the manner of these savage animals; they ran naked through the lonely deserts with a furious aspect, and with all the agitations of madness and phrensy; they prolonged the life of their emaciated bodies by the wretched nourishment of grass and wild herbs, avoided the sight and conversation of men, remained motionless in certain places for several years, exposed to the rigour and inclemency of the seasons; and towards the conclusion of their lives, shut themselves up in narrow and miserable huts; and all this they considered as true piety, the only acceptable method of worshipping the Deity, and rendering him propitious. The Mystics, for the most part, were led into the absurdities of this extraordinary discipline, not so much by the pretended force of reason and argument, as by a natural propensity to solitude, a gloomy and melancholy cast of mind, and an implicit and blind submission to the authority and example of others. For the diseases of the mind, as well as those of the body, are gene-

rally contagious, and no pestilence spreads its infection with a more dreadful rapidity than superstition and enthusiasm. In the ninth century, the doctrine of the Mystics, the origin of which is falsely attributed to Dionysius the Areopagite, which had been for a long time in vogue among the Greeks, and especially among the monastic orders, was disseminated in the western churches. The Latins had hitherto escaped the contagious influence of this doctrine: but when the Grecian emperor, Michael Balbus, or the Stammerer, sent to Louis the Debonnaire, in the year 824, a copy of the pretended works of Dionysius the Areopagite, now universally allowed to be spurious, even among the most learned and impartial of the Roman Catholic writers, this present kindled the flame of mysticism in the western provinces, and inspired the Latins with the most enthusiastic admiration of this new religion. The translation of these works into Latin, by order of the emperor Louis, contributed much to the progress of mysticism. By the order of the same emperor, Hilduin, abbot of St. Denys, composed an account of the life, actions, and writings of Dionysius, under the title of "Areopagitica," in which work, among other impudent fictions, usual in those times of superstition and imposture, he maintained, in order to exalt the honour of his nation, that Dionysius the Areopagite, and Dionysius, or St. Denys, the bishop of Paris, were one and the same person. This fable was received with avidity by the credulous multitude, and its credit is hardly extinct at this day. As the first translation of the works of Dionysius, that had been executed by order of Louis, was probably in a barbarous and obscure style, a new and more elegant one was executed by the famous Johannes Scotus Erigena, at the request of Charles the Bald; the publication of which considerably increased the partisans of the mystic theology among the French, Italians, and Germans. Scotus himself, called "The Wise," was so enchanted with this new doctrine, that he incorporated it into his philosophical system, and upon all occasions, either accommodated his philosophy to it, or explained it according to the principles of his philosophy. Thus philosophical enthusiasm, born in the East, nourished by Plato, educated in Alexandria, matured in Asia, and adopted into the Greek church, found its way, under the pretext and authority of an apostolic name, into the western church, and there produced many injurious effects.

In the twelfth century, these mystics took the lead in their method of expounding Scripture; and by searching for mysteries and hidden meaning in the plainest expressions, forced the word of God into a conformity with their visionary doctrines, their enthusiastic feelings, and the system of discipline which they had drawn from the excursions of their irregular fancies. In the thirteenth century they were the most formidable antagonists of the schoolmen, who, as they were less popular, endeavoured to recommend themselves by extolling, illustrating, and defending the sentimental system of their adversaries; towards the close of the fourteenth century, many of them resided and propagated their tenets almost in every part of Europe. They had, in the fifteenth century, many persons of distinguished merit in their number: and in the sixteenth century, previous to the reformation, if any sparks of real piety subsisted under the despotic empire of superstition, they were only to be found among the mystics. For this sect, renouncing the subtilty of the schools, the vain contentions of the learned, and all the acts and ceremonies of external worship, exhorted their followers to aim at nothing but internal sanctity of heart, and communion with God, the centre and source of holiness and perfection. Hence the mystics were loved and respected by many persons who had a serious sense of religion, and a devotional frame



frame of mind. Yet, as they were not entirely free from the reigning superstitions, but associated many vulgar errors with their practical directions and precepts; and as their excessive passion for contemplation led them into chimerical notions, and sometimes into a degree of fanaticism that approached to madness;—more effectual succours than theirs were necessary to combat the inveterate errors of the times, and to bring about the reformation which was expected with such impatience.

The principles of this sect were adopted by those called Quietists in the seventeenth century: and, under different modifications, by the Quakers and Methodists. Mosh. Eccl. Hist. Brucker's Hist. Philos. by Enfield.

MYSTOCEROS, in *Ichthyology*, a name given by Gesner and some others, to that species of the silurus which we call the sheat-fish. It is the glanus of Pliny, and the rest of the old authors; the silurus of Rondeletius, and others. It is distinguished by Artdi by the name of the silurus with four beards under the chin. It is plainly to be known from the fish called the *lake*, by this character, that having only one beard; it is a genuine species of the *silurus*; which see.

MYSTRUM, among the *Ancients*, a liquid measure, which was the fourth part of the cyathus.

It weighed about two drams and a half of oil; and of water or wine, two drams two scruples. It was much about our small spoonful.

MYSTUS, in *Ichthyology*, a species of *Clupea*; which see.

MYSTUS *Fluviatilis*, a name by which some writers, particularly Bellonius, have called the common *barbel*. See *CYPRINUS Barbus*.

MYSTUS *Marinus*, the *Sea-barbel*, the name of a fish caught in the Adriatic, and common in the markets of Venice. It is of an oblong figure, and in colour of a silvery-white, variegated on each side with ten obliquely transverse black lines; its belly is very white; its tail is forked, and its head long; its back fin has part of its rays prickly, part soft to the touch; its eyes are not large, and their irises are yellow; its lips are prominent, thick, and soft, and only serrated in the place of teeth; but in the hinder part of its mouth it has several rows of short and large molares or grinders; its scales are large, and adhere firmly to the flesh. It is a very well-tasted fish.

MYSTUS *Niloticus*, a name given by Bellonius to a fish of the *barbel* kind, caught in the Nile. Its body is thick and short, and its belly very broad; it grows to so large a size as to weigh twenty pounds. Probably this may be no other than the common *barbel* growing to a larger size, as we see many fish will in some places more than others. See *SILURUS Mytus*. For other species of *mytus*, see *SILURUS*.

MYSZ, in *Geography*, a town of Lithuania, in the palatinate of Novogrodek; 36 miles S. of Novogrodek.

MYTACISM, *Μυτακισμός*, in *Rhetoric*, the too frequent repetition of the letter M; thus, *mammam ipsam amo quasi meam animam*.

MYTENS, DANIEL, of the Hague, in *Biography*, was an admired painter in the reigns of James I. and Charles I. to the latter of whom he was made picture-drawer in ordinary, in May 1625. He continued to hold this station at the arrival of Vandyrke in England; but upon that artist being made principal painter to his majesty, he asked leave to retire. The king, however, retained him for some time longer in his service, and the two rivals, if they may be so called, lived amicably together. Mytens saw and acknowledged the high degree of Vandyrke's talents, and benefited by the observance of his productions.

There are a great many excellent portraits by Mytnes in

this country, which are distinguishable by the neat smoothness, and clearness of their finishing; and their great air of nature. We have none of his pictures painted after 1630. The period of his death is not exactly known.

MYTHOLOGY, *μυθολογία*, signifying a discourse or description of fables, from *μυθος*, *fabula*, and *λογος*, *sermo*, *discourse*, the history of the fabulous gods and heroes of antiquity; with the explanation of the mysteries or allegories couched under it.

Lord Bacon thinks that a great deal of concealed instruction and allegory was originally intended in most parts of the ancient mythology; he observes that some fables discover a great and evident similitude, relation, and connection, with the thing they signify, as well in the structure of the fable as in the meaning of the names, whereby the persons or actors are characterized.

The same writer thinks it may pass for a farther indication of a concealed and secret meaning, that some of these fables are so absurd and idle in their narration, as to shew an allegory even afar off: but the argument of most weight upon this subject, he takes to be this, that many of these fables appear by no means to have been invented by the persons who relate them: he looks on them not as the product of the age, nor the invention of the poets, but as sacred relics as he terms them, gentle whispers, and the breath of better times, that from the tradition of more ancient nations, came at length into the flutes and trumpets of the Greeks. He concludes, that the knowledge of the early ages was either great or happy: great, if they by design made this use of trope and figure; or happy, if, whilst they had other views, they afforded matter and occasion to such noble contemplations.

Mythology, which leads us into an acquaintance with the gods and fables of ancient times and remote nations, is of such importance, that, notwithstanding the obscurity and uncertainty in which it is involved, and the scope which it affords for conjectures and differences of opinion, that the study of it cannot be wholly disregarded; more especially by persons who peruse the writings of the Greeks and Romans, and particularly those of their most celebrated poets. It likewise bears relation to various branches of literature and science, that are deemed both curious and useful; and will contribute to guide and assist the researches of historians, antiquarians, and of artists of various descriptions. Whilst the classical scholar finds it necessary to acquaint himself with the Pagan gods and fables, the fictions of antiquity, and the numerous monuments that record them, duly examined, will serve to amuse and instruct those who investigate them; and mythology will thus subserve many useful purposes in chronology, history, sculpture, painting, and other arts and sciences. It will require, indeed, a considerable share of judgment to guard against delusion, correctly to interpret the fables that present themselves, and to form a just opinion of the rank, attributes, and character, as well as of the number and variety, of the deities which were acknowledged as such in different ages and nations. Mythology has additional claims on our attention, if we allow, with some writers, that the fables of antiquity are not mere fictions, but that they have a real connection with the history of the first ages, and comprehend some of their most considerable transactions; and that most of the gods had been men, whose history forms a part of that of the particular nations in which they became objects of veneration, and even of worship. As fables constitute the proper subjects of mythology, it may not be amiss to introduce in this place a few remarks on their origin, nature, and design, and the proper method of explaining them. Simple and unornamented truth, addressed merely



merely to the understanding, is seldom sufficiently interesting and impressive to engage the attention of mankind. Philosophers, historians, and poets have, therefore, recurred, in all ages of the world, to those embellishments, which the imagination supplies, and which are adapted to excite and call forth into exercise the feelings and passions of the human frame. Hence they have been led to use forms and modes of expression that have been suggested to them, either by sensible objects, or by occurrences that are rare and uncommon, and that serve to excite admiration, and to impart amusement and pleasure. Fables are compositions of this kind: they are more easily understood, more likely to command attention and to impress the mind, and better fitted for conviction and persuasion, than abstract truth: and therefore they have been more generally adopted, especially in the earlier periods of time, and in a less cultivated state of society than mere reasoning. Among the orientals, whose climate and disposition were peculiarly favourable to it, this practice very much prevailed; and of course their mythology has been distinguished by its boldness and extravagance. Some other circumstances contributed to the first rise, and subsequent diffusion of mythology. The inhabitants of the eastern nations were much addicted to the personification of inanimate objects, and abstract ideas; and this propensity would naturally lead them to the use of fable and allegory. Amongst them hieroglyphics and enigmatical modes of expression were very common; and in the adoption of these they nearly approximated to fiction and fable. Among ingenious and learned writers, we find a considerable difference of opinion as to the best method of explaining those fables, that are the subjects of this article, or such as relate to the Pagan gods, and the rites of their worship. The Platonic philosophers pretended that these fables were mere allegories, concealing great mysteries, none of which would appear either absurd or licentious, when duly developed. Plato himself seems to have originally framed this system. Other learned persons, at a later period, among whom we may reckon Kircher, recurred for the investigation of the true meaning of these fables to the hieroglyphics, or sacred language, of the Egyptians; but it is unfortunate for his hypothesis, that the fables which require explanation were not all of Egyptian origin. The celebrated Bochart thought that most of the fables might be explained by the equivocal words of the ancient Phœnician language; the fables, however, were not all invented by the Phœnicians. Others refer all the fables to scripture misunderstood, or to corrupted traditions. But many of these fables abound with circumstances that have no manner of connection with the facts recorded in the sacred books. The system of those who reduce fables to ancient history, though disfigured by the poets, who were the first historians, serves to explain a great number of fables, though it is not practicable to reduce all to history; since some fables are no more than pure allegories. Nevertheless, this system appears to M. Banier, under some restrictions, to be the most rational, and most satisfactory; provided that we do not attempt to explain all the circumstances of every fable; and if we do explain them, we must take them from poets of the greatest antiquity, such as Homer and Hesiod, who have given them in a more simple state, together with a more natural description of the facts to which they refer, and without those ornaments that were superadded to them in after ages, either to make them more venerable, because they were a part of religion, or more surprising, because it is natural for mankind to delight in the marvellous.

We may here observe, that most of the Greek fables are obtained from Egypt and Phœnicia. The fables are interwoven with religion, and were, indeed, the foundation on

which it was reared; it was fable that introduced a multiplicity of gods, which they substituted in the room of the true one; so that the Greeks, by learning the religion of the Egyptians, learned their fables likewise.

The learned Bryant, in the preface to his "Analysis of Ancient Mythology," rejects as fabulous the supposed heroes of the first ages in every country. No such conquests, he says, were ever achieved, as are ascribed to Osiris, Dionusius, and Sesostris. The histories of Hercules and Perseus are equally void of truth. Cadmus, as this writer asserts, never brought letters into Greece, and no such person ever existed as the Grecians have described. Ninus and Semiramis are, in his opinion, as ideal as Sesostris and Osiris. There never were such expeditions undertaken, or conquests made, as are attributed to these princes; nor were any such empires constituted as are supposed to have been established by them. He makes as little account of the histories of Saturn, Janus, Pelops, Atlas, Dardanus, Minos of Crete, and Zoroaster of Bactria. With respect to Greece, our author gives credit to very few events, which were antecedent to the Olympiads; nor does he give the least assent to the story of Phryxus, and the golden fleece; he denies that there were any such persons as the Grecian argonauts, and he rejects the expedition of Jason to Colchis as a fable. As the theology and mythology of the ancients are inseparably connected, we refer for an account of both to the article THEOLOGY; and for the mythology of different nations to their respective articles. See CHALDEAN Philosophy, CELTS and DRUIDS, HINDOOS and the next article, COSMOGONY, ORACLES, THEOGONY, &c. For the mythology of the northern nations, *i. e.* of the Norwegians, Danes, Swedes, Icelanders, &c. see EDDA, ODIN, and VOLUSPA. For that of Mexico and Peru, see these articles.

MYTHOLOGY of the Hindoos. With this people mythology is so intimately blended in all their writings, that unless the student hath some information on that point, he will be continually at a loss in comprehending the allusions so frequently recurring. The whole of their popular religion, their history, and literature in general, even the sciences and mechanical arts, are buried in a mass of mythological allegory. It is, indeed, all-pervading; and if we deem it worth while, as it surely is, to examine the stories of Indian learning, a knowledge of its mythology is no less necessary than a knowledge of its languages. One cannot indeed be acquired, without acquiring, at the same time, some knowledge of the other. This has been so much felt, that our most celebrated Oriental scholars have profitably employed themselves in the investigation of this curious and comprehensive subject. It affords also considerable elucidations of the primeval traditions of the human race. It illustrates what is extant, and suggests some parts of what is lost in the history of almost every nation of antiquity. The analogy between the Hindoo, and Grecian and Roman mythology, has been copiously developed by sir W. Jones, Mr. Colebrooke, major Wilford, and other writers in the different volumes of the Asiatic Researches. Coincidences too strong and numerous to be accidental may be traced in the fabulous histories of India, Egypt, and Persia; the two latter, probably, being the intermediate countries through which the stream of allegory flowed to Greece, Rome, and to the Gothic and other nations of Europe, among all of whom a similarity of tradition and popular superstition is found to have prevailed. Even in Ireland, some amusing instances of relationship have been discovered. Which is the parent country of these widely spread impressions, is not altogether agreed on. India seems to have strong claims to this honour, such as it is,



and it is accordingly strongly claimed for her. The mode and course of their propagation still afford farther scope for the industry of research, and the exertion of analogical deduction.

Among the many writers who have discussed the subject of this article, we may notice the Rev. Mr. Maurice; who, in his *Indian Antiquities*, and *Ancient History of India*, has brought together many coincidences of opinion in different nations, and discussed them learnedly and at length. Sonnerat and Bartolemeo, not to mention Baldæus and other early Romish travellers, have entered pretty fully into the popular legends of Indian mythology; and the Hindoo Pantheon, recently published, contains a great number of exact representations of the deities, personifications, and symbols, with descriptive illustrations, of this superstitious polytheism. But it is in the Asiatic Researches, that we are still to look for the most satisfactory and authentic developments of this interesting subject. The system of the Hindoos seems a series of endless personifications, and the invention rather of poets than of priests; but in early ages the poet and the priest were, perhaps, generally combined. It has animated all nature. It has peopled the heavens, the air, the earth, and waters, with innumerable tribes of imaginary beings, arrayed in tints corresponding with the fervid imagination of tropical climes; and we are disposed to contemplate Hindoo mythology as a well-stored magazine, whence poets may supply themselves with an almost infinity of imagery and incident.

In this work we have availed ourselves of the labours of those, who have written on the affairs of India, as well as of some sources of original information; and in reference more particularly to its mythology, we have given, or shall give, under their appropriate names and heads, an account of some hundreds of Hindoo deities, or personifications of attributes and powers; as well as sketches of their religion, literature, &c. Such articles are too numerous to be referred to at length, they amount indeed to several hundreds: but a few here follow, and references are made from them to many others. See BRACHMANS, CASTS, HINDOOS, HINDOOSTAN, GANGES, JAGANATH, JAINA, JEJURY, INDRA, KALI, KAMA, KRISHNA, LAKSHMI, LINGA, MAHABARAT, MATRI, MAYA, MERU, NARAYANA, O'M, PARVATI, PAVAKA, PURANA, RAMA, SARASWATI, SIVA, SURYA, TRIMURTI, VISHNU, YAMA, &c. &c.

MYTILUS, the Mussel, or Muscle, in *Conchology*, a genus of the class and order Vermes-testacea: the generic character is this; the animal is allied to an ascidia; the shell is bivalve, rough, generally affixed by a byssus or beard of silky filaments; the hinge is mostly without teeth, with generally a subulate excavated longitudinal line. There are about sixty-four species included in this genus, separated into three distinct families or divisions.

#### A. *Parasitical; affixed as it were by Claws.*

##### Species.

CRISTA-GALLI. Shell plaited, spinous; both lips rough. It inhabits the Indian ocean and Red sea, and is affixed to the gorgonia; the shell is of a purple-violet, pale cinnamon or bay, rough, raised with dots; within of a honey colour; nearly equivalve, and closed with from five to ten oblique or straight acute plaits; at the hinge it is triangular.

HYOTIS. Shell plaited and imbricate, with broad compressed scales; both lips smooth. This species inhabits the ocean, on beds of coral; the shell is of a dirty-greenish-yellow, lamellate, the plaits curved here and there, and beset with hollow grooved nuclei.

FRONS. Shell plaited, smoothish; one lip rough. It inhabits the American ocean, on coral beds; the shell is reddish, blueish, or brown, generally oval, with the margin plaited on each side, and denticulate; the lower valve is glabrous, and grooved in the middle; the upper valve is rough, with raised dots at the margin, and an elevated rib in the middle.

#### B. *Flat or compressed into a flattened form, and slightly eared.*

##### Species.

MARGARITIFERUS; Pearl Muscle. Shell flattened, nearly orbicular, with a transverse base, imbricate with toothed tunics. It is found in the American and Indian seas, is about eight inches long, and still broader than it is long. The inside is beautifully polished, produces the true mother-of-pearl, and frequently the most valuable pearls; the outside is sometimes sea-green or chestnut, or bloom colour, with white rays; when the outer coat is removed, it has the same perlaceous lustre in the inside; the younger shells have ears as long as the shell of the scallops.

UNGUIS. Shell longitudinally striate, pellucid and slightly eared. This species inhabits the Mediterranean; the shell is thin and hyaline, with very fine perpendicular striæ, about the size of a man's nail; some persons imagine that this is a species of the genus *Ostrea*, which see.

#### C. *Ventricose or convex.*

\* LITHOPHAGUS. Shell cylindrical, rounded at both ends. It inhabits European, American, and Indian seas, penetrating and eating away corals, rocks, and even the hardest marbles; it is about an inch broad, and three inches long, marked with arched transverse striæ; the shell is dark bay, with a greenish tint, but within it is opal-blue, silvery-white, or perlaceous. The European specimens have a thin brittle shell; the Indian ones are softer, and nearly coriaceous.

\* RUGOSUS. The shell of this species is rhombic oval, brittle, rugged, antiquated, and rounded at the ends. It inhabits the northern seas and lakes, and is usually found lodged in great numbers in lime-stone, each in a separate apartment, with apertures too small for the shell to pass through without breaking the stone; the shell is about the size of the last joint of a man's little finger; its colour is of a dirty grey, and within it is half blue and half white, marked with very small longitudinal striæ crossing the transverse wrinkles.

BILOCULARIS. Shell blue striate, with vaulted knobs and a white dissepiment or partition. It inhabits the Nicobar islands, and is covered with a green skin.

EXUSTUS. Shell convex, one of the margins angular; the frontal extremity crenate. This species is found in the American ocean, and in the Red sea; it is about an inch and a half long, and has a hinge with four or five lateral teeth.

BARBATUS. Shell smoothish, ferruginous on the outside, and bearded at the tip. It inhabits the Mediterranean seas, adhering to the lithophytes; is about three quarters of an inch long, and under the skin it is reddish-ferruginous, blue, or whitish.

\* EDULIS; Edible Muscle. Shell smoothish violet, the valves slightly recurved on the obtuse side, and somewhat angular on the acute side; the beaks are pointed. It inhabits the European and Indian seas; is two or three inches long, but larger within the tropics, and smaller as we proceed northward. Found in large beds, and generally adhering to other bodies, by means of a long silky beard.

\* INCUR-



## MYTILUS.

\* **INCURVATUS.** The shell of this species is very crooked on one side near the beaks, then greatly dilated; within it is marked with a violet tinge. Found on the Anglesea coast; the shell is covered with a thick rough skin.

\* **PELLUCIDUS.** Shell oval, transparent, and very elegantly radiate lengthways with purple and blue. This, like the last, is found at Anglesea, in oyster beds, and is about two inches long.

\* **UMBILICATUS.** Shell contracted into a deep rugged cavity opposite the hinge, forming a deep hollow when the valves are closed. It is found at Anglesea, and is nearly five inches long; the shell is oval, resembling the *M. modiolus*, described farther on, but it is distinguished by the remarkable indentation near the beaks.

\* **CURTUS.** Shell short, ventricose, obtuse at the beaks, and of a dirty yellow. It is found at Weymouth.

\* **UNGULATUS.** The shell of this species is smooth and slightly curved; hind-margin inflexed; hinge terminal and two-toothed. It inhabits the Mediterranean and Cape of Good Hope. There is a variety of this species found at New Zealand, that resembles the *M. edulis*, but is full five inches long, and two inches and a half broad; the valves are very convex, resembling the hoof of an ox.

\* **BIDENS.** Shell striate, slightly curved, the hind margin inflexed; the hinge terminal and two-toothed. It inhabits the Mediterranean, Ethiopic, Atlantic, and Magellanic seas.

\* **MODIOLUS.** Shell smooth and blackish, obtuse at the smaller end, and rounded at the other, one side near the beaks is angular. Two varieties are noticed by Lister. It inhabits the European, American, and Indian seas, adhering to fuci and zoophytes; is six or seven inches long, and about half as broad; the fish is red or orange, and eatable.

\* **CYGNEUS.** Shell ovate, very brittle, and transversely wrinkled; the anterior end compressed; the other rounded; the hinge lateral. Two varieties of this species are noticed by Lister. It is frequently found in rivers and ponds; is about two or three inches broad and three inches long; the shell is deep, and within it is white, opaque, and often rough with small pearls.

\* **ANATINUS; Duck Muscle.** The shell of this species is oval; a little compressed, very brittle and semi-transparent, with a membranaceous margin; the beaks are decuticated. It inhabits the fresh waters of Great Britain, and of other parts of Europe; it is about five inches long, and half as broad. Ducks and crows are extremely fond of this species, and of the *M. cygneus*, and the crows, when the shell is too hard for their bills, fly up with it to a great height, drop the shell on a rock, and pick out the meat after the shell is thus broken.

\* **VRIDIS.** Shell smooth, ovate, membranaceous, and pellucid, with a terminal linge. It inhabits the Southern ocean; the shell is green, very thin, and about the size of a man's nail.

\* **RUBER.** Shell wrinkled, the valves oblique and dilated in front; margin of the hinge equalling the tip. It inhabits the Southern ocean. The shell is red and convex, but very minute, with a short compressed tooth in the hinge.

\* **ALBUS.** Shell transversely striate; beaks gibbous; hinge lateral. It inhabits the shores of Chili. The shell is about six inches long and three and a half broad, covered with a blue skin, under which it is snowy, with a blue tinge; the fish is white, and very excellent food.

\* **ATER.** Shell grooved and scaly behind. It inhabits Chili; shell rough, like a penna, less than the last, dull blue; the fish is black and not eatable.

\* **DISCORS.** Shell oval, horny, sub-diaphanous; the extremities are striate longitudinally, the middle transversely. This species is found in the European and Southern oceans, affixed to rocks and other shells by its beard; the shell is small, brittle, and semi-transparent; the fish is not eatable.

\* **HIRUNDO.** The shell of this species is smooth; the valves are two-lobed. It inhabits the Indian, American, Mediterranean, and Atlantic seas, in great varieties of size, thickness, form, colour, and markings; the shell is contracted at the base, with very fine and crowded transverse wrinkles; within pearly.

\* **PHLODIS.** Shell oblong, more obtuse on the fore-part, rough, with transverse wrinkles. It inhabits the North seas, and penetrates beds of coral and rocks, like the *phloas*; which see. It is about  $1\frac{1}{2}$  inch long, and  $1\frac{1}{4}$  broad; the ends are not quite closed; the hinge is without teeth, or with a very small one.

\* **STRIATULUS.** The shell of this species is very finely striate; the hinge is terminal, and one-toothed. It inhabits the Northern and Indian seas; is  $1\frac{1}{4}$  inch long, and  $1\frac{1}{2}$  broad.

\* **VULGARIS.** Shell flattish on one side, and inflexed, with convergent incurved beaks; the hinge is one-toothed. It inhabits the American ocean.

\* **PLICATUS.** Shell rhombic, transversely striate and wrinkled; beaks incurved. It inhabits the Nicobar islands.

\* **NIVEUS.** Shell ovate, subdiaphanous, with very fine longitudinal striæ; margin acute; hinge two-toothed. Inhabits the Nicobar islands, but is very rare.

\* **SMARAGDINUS.** The shell of this species is nearly triangular and flattish; the hinge is two-toothed in one valve, and one-toothed in the other. It inhabits Tranquebar, is green and a little perlaceous within. There is a variety of this species found in Guinea; brown, with a green margin, and sometimes a few spots on the disk.

\* **VERSICOLOR.** Shell nearly triangular and flattish; the hinge is one-toothed; the margin glabrous and acute. This is found on the shores of Guinea; resembles the *M. afer*, is three inches long, and more than two broad.

\* **CORALLIOPHAGUS.** The shell is carinate in the middle, and crenate at the margin, with an obtuse knob. It inhabits the Indian and American oceans, and perforates rocks like the *phloas*; it is about  $\frac{3}{4}$ ths of an inch long.

\* **LINEATURA.** Shell triangular, and dilated outwards, with angular decussate and confluent lines; the hinge is two-toothed. It is a very minute shell, yellow, with a mixture of green, and within it is a little silvery.

\* **FABA.** The shell of this is oval, rufous, striate, with a crenulate margin. Inhabits the seas about Greenland, affixed to rocks by a byssus or beard, and is the food of the *Anas hyemalis*, or *lystrionica*.

\* **FLUVIATILIS.** Shell thin, slightly wedged, within reddish; beaks recurved and large. It inhabits the fresh waters of Europe; resembles the *M. anatinus*, and is thought to be a variety of the same species.

\* **FUSCUS.** Shell oblong, narrow, with very fine transverse striæ; one side emarginate, the other rounded; beaks prominent, and curved.

\* **MAMMARIUS.** Shell broad, short, and rounded behind; beaks conic, protuberant.

\* **PERSICUS.** Shell broad, and covered with a rough yellow coat; within it is milky. It inhabits the Persian sea, and is thrice as broad as it is long.

\* **PICTUS.** Shell broad and very smooth; flammeous or rose colour, with white bands; the beaks are obtuse. It inhabits Portugal, and, like the last, is thrice as broad as it is long.



**FASCIATUS.** Shell pellucid, shining, blueish, with a claret colour, and pale red band. It inhabits the Brasils, and is about twice as broad as it is long.

**UNDATUS.** Shell broad, and rounded at both ends, claret colour, with undulate blueish and greenish striæ; margin ferrate. It inhabits the sea about Portugal.

**PURPUREUS.** Shell rounded behind; pale flesh colour, purple within, the margin denticulate. It inhabits the shores of Brazil.

**SAXATILIS.** Shell ear-shaped, with granulate wrinkles on the outer side dilated and rounded. It inhabits Amboyna, is fixed to rocks, and is eaten by ducks and swine; is shorter and broader than the joint of the finger.

**ARGENTINUS.** Shell transversely striate, rounded at each end, brown, silvery within; beaks rounded.

**FULGIDUS.** Shell narrow, shining, blueish colour, with violet spots at the sides; the beaks are rounded and dilated. It inhabits the seas of Magellan, and shines like mother-of-pearl.

**AZUREUS.** Shell gibbous, azure, with yellowish stripes beneath; beaks obtuse.

**MURINUS.** Shell mouse colour, with violet spots, and a broad rounded rosy margin; beaks pointed, straight. Inhabits Guinea.

**TESTACEUS.** Shell long and narrow, covered with a testaceous skin, under which it is shining-silvery, varied with blue, red, yellow and brown.

**VIRGATUS.** Shell dilated outwardly, greenish-yellow, with rosy stripes; the beaks are obtuse and curved.

**CORDATUS.** Shell oblong, very thin, white, with obsolete striæ; with a heart-shaped gape behind. It inhabits the Indian and Southern oceans, adhering to corals, and marine substances.

**STAGNALIS.** Shell oval, flattish, and transversely ribbed; it resembles *M. cygneus*, but is eight inches broad, and four and a half long.

**ZELLENSIS.** Shell oval, convex, rounded behind, elongated and obtusely pointed before; the beaks are obsolete. It inhabits the stagnant waters of Germany.

**ROSEUS.** Shell tuborbicular, with fifteen triangular crested grooves, and alternate triangular teeth. It inhabits Africa.

**PUNICEUS.** Shell gibbous, pointed, with fifteen grooves; margin toothed. It inhabits Africa.

**NIGER.** Shell flat and thin, with fine grooves; covered with a black skin, under which it is milky, and finely polished. Found also in Africa. The shell is very thin, is about an inch and half long, and has about 100 grooves in it.

**LEVIGATUS.** Shell flat and smooth, covered with a thick fulvous skin, under which it is rosy. It is found in Africa.

**DUBIUS.** Shell transversely wrinkled, obtuse at each end, fulvous, within pearly; the beaks are obsolete, and the hinge is without teeth. It inhabits the fresh waters of Senegal, is five inches broad and two long.

**POLYMORPHUS.** Shell five-celled; valves carinate and flattish on the incumbent side; the beaks are obtuse and inflected.

**CANICULATUS.** Shell smoothish, chestnut-brown; within party-coloured; socket of the hinge caniculate. It inhabits New Zealand.

**ROSTRUM.** Shell oblong, thin, greenish, truncate; beaks sharp and carinate; valves gaping at the end. Inhabits Amboyna.

**CAMELLII.** Shell oblong, thin, greenish, truncate; beaks sharp and crenate; valves completely closed. It is found at Japan.

**MYTIS**, a name used by some writers to express the black juice found in the mouth of the sepia, or cuttle-fish,

with which it colours the water when in danger of being taken, and by this means often makes its escape. It is also used by Hippocrates as the name of a sea-fish different from the sepia.

**MYTTOTON**, a word used by the ancients to express a mixed sort of country food, made of garlic, onions, eggs, cheese, oil, and vinegar. It was much eaten by the labouring people among the ancients, and accounted a very wholesome dish.

**MYURUS**, *μυρος*, in *Medicine*, denotes a pulse which is continually weakened by insensible degrees, so that the second beat is fainter than the first, the third than the second, &c. See **PULSE**.

The word is compounded of *μυς*, *mouse*, and *ουρα*, *tail*; the diminution of the pulse being supposed like that of the thickness of the tail of that animal, which grows less from the root to the tip.

**MYUS**, or **MYONTE**, in *Ancient Geography*, a town of Caria, which had an excellent sea-port at the mouth of the river Meander; but in a course of years the mouth of the river was so stopped up, that the town was about three leagues from the sea. It was situated N.E. of Miletus, and S.E. of Priene. The Greeks took possession of this town on their arrival in Ionia; and it became the fort of their other colonies. Artaxerxes Longimanus gave it to Themistocles, in order to furnish his table with meat. When the entrance of the gulf of Latmus was stopped, the waters formed a lake, which produced such a number of insects, that the inhabitants abandoned the place, and retired to Miletus. Pausanias says, that in his time there existed a marble temple of Bacchus in this town.

**MYUTES LAPIS**, in *Natural History*, a name given by some authors to a fossil body, part of an asteropodium, which they have thought in single joints somewhat resembled the ears of a mouse.

**MYXA**, in *Botany*, a sort of plum, which Pliny says grew in Syria, near Damascus, and that a kind of wine was made from this fruit in Egypt. The Venetians appear to have introduced these plums, in a dried state, from Alexandria to Europe, and they found their way into the apothecaries' shops, as a gentle purgative medicine. The Alexandrian bird-lime, as the Venetians termed it, was made of this fruit. See **CORDIA**, species 1.

**MYXINE**, the Hag, in *Natural History*, a genus of the class and order Vermes intellini. Its generic character is this: it has a slender body, carinated beneath; the mouth is at the extremity, and ciliated; the two jaws are pinnated; it has an adipose or rayless fin round the tail and under the belly. There is but a single

#### Species.

**GLUTINOSA.** This is about eight inches long. It inhabits the ocean; enters the mouths of fishes, and totally devours the whole, excepting the skin and bones. There has been attributed to it the property of changing water into glue.

**MYXOLYDIAN**, in *Ancient Music*, the first species of the *diapason*.

**MYXON**, in *Ichthyology*, the name of a fish of the mullet kind, called by others *bacchus*.

It much resembles the common mullet; but its head is less pointed, and its body is covered, beside the scales, with a mucous matter; it has a remarkable irregularity in the manner of its swimming, and looks red about the lips and covering of the gills.

**MYXOSARCOMA**, from *μυξα*, *mucus*, and *σαρξ*, *flesh*, in *Surgery*, a tumour, composed partly of a fleshy substance, and partly of a matter like mucus.



# N.

## N A A

**N**, A liquid consonant, or semi-vowel, and the thirteenth letter of the Greek, Latin, English, &c. alphabets.

The N is a nasal consonant; its sound is that of a *d*, passed through the nose: so that when the nose is stopped by a cold, or the like, it is usual to pronounce *d* for *n*. M. l'Abbé de Dangeau observes, that in the French the *n* is frequently a mere nasal vowel, without any thing of the sound of a consonant in it. He calls it the Slavonic vowel. The Hebrews call their N, *Nun*, which signifies *child*, as being supposed the offspring of M; partly on account of the resemblance of sound, and partly that of the figure. Thus from the *m*, by omitting the last column, is formed *n*; and thus from the capital N, by omitting the first column, is formed the Greek minuscule *ν*. Hence, for *Biennius*, &c. the Latins frequently use *Bimus*, &c. and the same people convert the Greek *ν* at the end of a word into an *m*; as, *φάρμακος*, *pharmacum*, &c. See M.

N before *p*, *b*, and *m*, the Latins change into *m*, and frequently into *l* and *r*, as in *ludo*, *illudo*; in *rigo*, *irrigo*, &c. in which they agree with the Hebrews, who, in lieu of *nun*, frequently double the following consonant; and the Greeks do the same, as when for *Manlius*, they write *Μαλλιος*, &c.

The Greeks, also, before *κ*, *γ*, *χ*, *ν*, changed the *ν* into *γ*: in which they were followed by the ancient Romans, who for *Angulus* wrote *Aggulus*; for *anceps*, *agceps*, &c. The Latins retrench the *n* from Greek nouns ending in *ων*; as *λεων*, *leo*, *δρακων*, *draco*. On the contrary, the Greeks add it to the Latin ones ending in *ο*: as *Κατων*, *Nεπω*, for *Cato*. *Nero*

In English, N has an invariable sound: as *no*, *name*, &c. After *m* it is sometimes almost lost, as *condemn*, &c.

N, among the *Ancients*, was a numeral letter, signifying 900; according to the verse in Baronius,

“N quoque nongentos numero designat habendos.”

And when a line was struck over it, *N̄*, nine thousand.

Among the ancient lawyers, *N. L.* stood for non liquet, *i. e.* the cause is not clear enough to pass sentence upon. *N. P.* was used among the Romans for notarius publicus. *N. C.* for Nero Cæsar, or Nero Claudius. *N. B.* is used for Nota bene. In marine language, *N* stands for north.

N, or N<sup>o</sup>, in *Commerce*, &c. is used as an abbreviation of numero, number. Thus also, in *Medicine*, carryophyllorum N<sup>o</sup> vi, signifies six cloves. N on the French coins, denotes those struck at Montpelier.

NAAGRAMMA, in *Ancient Geography*, a town of India, on the Ganges, placed by Ptolemy between Budæa and Camigera.

NAAGRAMMUM, the metropolis of the island of

## N A B

Taprobana, which Ptolemy places in the interior of the country between Anurogrammum and Adisamum.

NAAM, or NAM, *Namium*, in *Law*, the taking or distraining another man's moveable goods.

This is either *lawful* or *unlawful* and prohibited.

NAAM, *Lawful*, is a reasonable distress, proportionable to the value of the thing distrained for; and anciently called either *vif* or *mort*, as it was made of quick, or dead chattel.

Lawful Naam is so either by the common law; as when a man takes another's beasts doing damage in his ground; or by a man's particular fact, as on account of some contract, &c.

NAAM, *Unlawful*, *vetitum namium*. See NAMIUM.

NAAMAN, in *Geography*, a small island in the Red sea. N. lat. 36°. E. long. 35° 50'.

NAAMAN'S *Creek*, a small stream of America, in Pennsylvania, which runs south-easterly into Delaware river, at Marcus' hook.

NAAMANISH, a town of the Arabian Irak, on the Tigris; 18 miles N. of Vafit.

NAARDEN, or NARDEN, a sea-port town of Holland, situated at the S. part of the Zuyder see. It is the capital of a small country called “Goyland,” which includes Naarden, Muyden, and Wesep, with 16 villages. This town has undergone many vicissitudes from the time of its being first built in 996 to the period of its capture by the French in 1795; 11 miles E. of Amsterdam. N. lat. 52° 23'. E. long. 5° 2'.

NAAS, a market and post-town of Ireland, in the county of Kildare and province of Leinster. It was a borough before the union, and is now the assize town of the county, but is small and of little importance. The county gaol and the sessions house are here, and during the civil wars it was a strong hold. It was anciently the residence of the kings of Leinster, and several parliaments were held here after the establishment of the English. There were also three monasteries, some of the ruins of which are still visible. Naas is 15½ miles S.W. from Dublin on the Great Southern road.

NAAS, a town of Sweden, in Dalecarlia; 34 miles S.W. of Fahlun.

NAB, a river of Bavaria, which rises from mount Fichtelberg, in the principality of Bayreuth, and runs into the Danube, 4 miles W. of Ratibon.

NAB'S *Bay*, a bay on the W. part of Hudson's bay, N. of cape Esquimaux.

NABAGANA, a river of Africa, which runs into the Indian sea, S. lat. 29° 30'.

NABAL, a town of Africa, in the country of Tunis, on the S. side of the peninsula of Dackhul, in the bay of Hamam-et.



Hamam-et. According to Dr. Shaw, the town is thriving and celebrated for its potteries. It is about a mile distant from the sea, and about a furlong W. of the ancient city of Neapolis; 10 miles N. of Hamam-et. N. lat.  $36^{\circ} 20'$ . E. long.  $10^{\circ} 45'$ .

NABALIA, a small island of Egypt, in lake Menzaleh; three miles S. of Tennis.

NABAN, a town of Egypt, on the left bank of the Nile; five miles S.S.W. of Benisuef.—Also, a town of Arabia, in the province of Oman; 108 miles W. of Julfar.—Also, a town of Persia, called “Nabend,” in the province of Laristan, near the gulf; 70 miles W. of Lar. N. lat.  $27^{\circ} 30'$ . E. long.  $52^{\circ} 20'$ .

NABARI, a town of Japan, in the island of Niphon; 15 miles S. of Iga.

NABATHŒA PETRA, in *Ancient Geography*, a town of Arabia, according to Strabo; who places it between the Arabian gulf and Babylonia. This is the town mentioned by Ptolemy, under the name of Petra, in Arabia Petræa.

NABATHŒA *Siliqua*, in the *Materia Medica*, a name given by the interpreters of Avicenna, and other of the Arabian physicians, to the *jembut*, or *aljembut*, of those authors.

It appears, from the accounts they have given us of this drug, that it was a long and slender pod, produced on a thorny tree. It has been generally supposed to be the same with the carob, or *siliqua dulcis*, but very erroneously. The same authors who mention this *aljembut*, or *nabathæa siliqua*, mention that also under the name of the *alnabati*, or Syrian *siliqua*, as it is interpreted.

The Syrian *siliqua*, they say, purges, and is good in colics.

The *nabathæan* they recommend to us as an astringent in hæmorrhages. It is plainly to be inferred from this, that the *nabathæa siliqua* is different, in the greatest degree, from the Syrian pod, or carob fruit; and by its virtues, and the description they give us of the thorny tree which produces it, it seems very probable that it was the pod of some species of the acacia.

NABBURG, in *Geography*, a town of Bavaria, situated on the Nab; 10 miles E. of Amberg. N. lat.  $49^{\circ} 27'$ . E. long.  $12^{\circ} 3'$ .

NABGIN, or *Tumbo Namin*, a small island in the Persian gulf; five miles S.W. of Tumbo.

NABHANA, a town of Africa, in Tunis; 40 miles from Cairoan.

NABIS, in *Biography*, a famous tyrant of Lacedæmon, who attained to the supreme power about the year 206 B.C., after the death of Machanidas, and while the lawful king Agespolis was living in exile, is represented as one of the worst and most cruel of men;—the enemy of all noble and virtuous persons, and intent only to fill his treasury, and aggrandize himself by the most unjustifiable means. He, however, is said to have performed, with regularity, the functions of a chief magistrate, and he, probably, made his government acceptable, on the whole, to the body of the nation, since he was able to employ a large public force, and to extend his dominion into the neighbouring states. During the war between Philip, king of Macedon, and the Romans, that monarch not being able to retain Argos, which he had taken, delivered it to the keeping of Nabis, who began to practise every extortion to enrich himself with its spoils. He compelled the magistrates to pass two decrees, one for cancelling old debts, the other for an equal division of lands, by which he hoped to ingratiate himself with the lower classes. He obliged, by force, the principal male inhabitants to surrender all their jewels and other valuables;

while he deputed his wife on a similar errand with respect to the females. After this he made an alliance with the Romans, but when the final defeat of the Macedonians had restored liberty to Greece, and Nabis was left in possession of Argos, which was considered as discreditable to the Romans, the senate decreed that their general, Quintus Flaminius, should carry on war upon him. As, however, the Roman general could make no impression upon that city, he led his forces to Sparta itself. Nabis prepared for a vigorous resistance, and to secure himself from internal treachery, he infamously massacred eighty young men of the principal families of his state. The Roman army laid waste the country around, and reduced several places on the sea-coast, especially Gythium, the station of the Lacedæmonian maritime force. Nabis sued for peace, but the terms proposed by the Roman general were so severe, that he preferred to risk the consequences rather than submit to them. He was, however, a coward as well as tyrant, and was obliged to supplicate for peace on any terms. Scarcely had the Romans withdrawn themselves, when Nabis began to plan the recovery of his power, but in the event he was slain, which happened in the year 193 B.C., after he had, during fourteen years, acted a considerable part in the affairs of Greece.

NABLOUS, or NAPLOSA, in *Geography*, a town of Syria, and capital of a hilly country, anciently celebrated under the name of the kingdom of Samaria, but at present called the country of Nablous. This town, situated near to Sichem, and on the ruins of the Neapolis of the Greeks, is the residence of a scheick, who farms the tribute, for which he is accountable to the pacha of Damascus, when he makes his circuit. The state of this country is similar to that of the Druzes, with this difference, that its inhabitants are such zealous Mahometans, as not willingly to suffer any Christians to reside among them. They are dispersed in villages among the mountains; the soil of which is tolerably fertile, and produces a great deal of corn, cotton, olives, and some silks. The town has several mosques; and carries on a considerable traffic with Damascus and the coast: it has a cotton manufacture. Jews of the Samaritan sect are numerous. Although a nominal deputy be appointed by the pacha of Damascus, the town is really governed by the inhabitants; 20 miles N. of Jerusalem. N. lat.  $32^{\circ} 16'$ . E. long.  $35^{\circ} 22'$ . Volney's and Browne's Travels.

NABLUM, in Hebrew *nebel*, an instrument of music among the Hebrews. The Seventy, and the Vulgate, translate it sometimes by *nablum*, and at other times by *psalterion*, or *lyra*, or even *cithara*.

The *nablum* was a stringed instrument, very near of the form of a  $\Delta$ , which was played upon by both hands with small sticks, like the dulcimer. See Calmet's Dissertation concerning the musical Instruments of the ancient Hebrews, prefixed to the second volume of his Commentary on the Psalms.

Kircher supposes it was the same as the psaltery.

Baptist Fcolengius, on the 33d psalm, says that this instrument was esteemed the most noble of all. Because, when the seventy symphonists who blew the trumpet, and played the organs, the cymbals, and the lyre, were assembled to play in concert, the king played alone upon the *nablum*. “Rex solus salterio regio canebat.”

Achilles Tatius, in the first book of the Loves of Leuippus and Clitophon, describes a banquet, and says, that at the end of the repast a beautiful youth advanced with an instrument which he called the *cithara*, and trying the strings with his hands, he made them sound a little; then seizing the plectrum, he united his voice with the instrument.

NABO,



**NABO**, or **NEBO**, in *Ancient Geography*, a town of the tribe of Reuben, which, being in the vicinity of the land of Moab, was taken possession of by the Moabites, and belonged to them, as we learn from the prophet Jeremiah.—Also, a town of the tribe of Judah, about eight miles from Hebron, which appears to have been a desert in the time of Eusebius and Jerome.—Also, a mountain placed by Moses in the land of Moab, though seated on the other side of the Arnon, and, consequently, in the kingdom of Sihon. On this mountain Moses died. Deut. xxii. 49.

**NABO**, or *Nebo*, in *Mythology*, a deity of the Babylonians, who possessed the next rank to Bel. It is mentioned by Isaiah, ch. xli. 1. Vossius apprehends that Nabo was the moon, and Bel the sun; but Grotius supposes that Nabo was some celebrated prophet of the country, which opinion is confirmed by the etymology of the name, signifying, according to Jerome, one that presides over prophecy. Most of the Babylonish kings bore the name of that god joined to their own; as Nabonassar, Nabuchodonosor, &c.

**NABOB**, the name of a viceroy or governor of one of the provinces of the Mogul's empire in India. Nabob, or more properly *nawab*, is the plural of *naib*, a deputy.

As the term is used in Bengal, it has the same meaning with *Nazim*; which see. This title is given to the wives and daughters of princes, as well as to princes themselves.

**NABOBGUNGE**, in *Geography*, a name given to several towns of Hindoostan, in Bengal, Allahabad, and Oude.

**NABOBSERASPOUR**, a town of Bengal; 24 miles N.E. of Calcutta.

**NABOJA**, a town of New Mexico, in the province of Mayo; 32 miles N.E. of San'a Cruz.

**NABONASSAR**. The era of Nabonassar is famous: we know but little of the history of that prince; only that he was king of Babylon, and was also called Belshus; though some will have him the Baladan mentioned in Isaiah, xxxix. 1. and 2 Kings, xx. 12. Some even conjecture that he was a Mede; and that he was set on the throne by the Babylonians, upon their shaking off the government of the Medes.

The beginning of this prince's reign is of great importance in chronology; because Ptolemy assures us, there were astronomical observations made by the Chaldeans from Nabonassar to his time; and Ptolemy, and the other astronomers, account their years from that epocha. See **ASTRONOMY**.

From the observations quoted by Ptolemy, it follows, that the first year of this era is the 747th year before Jesus Christ; and the 3967th of the Julian period. See **EPOCHA**.

The years of this epocha are Egyptian years, of three hundred and sixty-five days each; commencing on the 29th of February, and reckoned, according to the computation of astronomers, from noon.

**NABOPOLASSAR**, in *Biography*, a prince of Babylon, united with Assyria against Syria, which country they conquered, and having divided it between them, founded two kingdoms, that of the Medes under Assyria, and that of the Chaldeans under Nabopolassar, in the year B. C. 626. Necho, king of Egypt, jealous of the power of the latter, declared war against him, and defeated him. Nabopolassar died after a reign of 21 years.

**NABOTH**, *Egg of*, in *Anatomy*, a kind of ovary near the neck of the womb, discovered by Naboth, professor of medicine in the university of Leipsic.

**NABTE**, in *Geography*, a town of Arabia, in the province of Hedsjas; 100 miles W.N.W. of Medina.

**NABUCHADNEZZAR**, in *Biography*. See **NEBUCHADNEZZAR**.

**NABUNAL**, **ELIAS DE**, a French cardinal, who flourished in the fourteenth century, and took his surname from the place of his nativity in the province of Perigord. He embraced the religious life in the order of the Friars-minors, and after several instances of church preferment, he became archbishop of Nicosia and patriarch of Jerusalem. In 1342 he was promoted, by pope Clement VI. to the dignity of cardinal-priest, with the title of St. Vital. He died at Avignon in 1367. He was author of several works, as "A Commentary on the four Books of Sentences of Peter Lombard;" "A Commentary on the Apocalypse;" "A Treatise concerning a contemplative Life;" and "Sermons explanatory of various Passages in the Evangelists." Moreri.

**NABUSTA**, in *Geography*, a town of Hindoostan, in Oude; 12 miles W.N.W. of Currah.

**NACA**, a town of Japan, on the E. coast of the island of Ximo. N. lat. 32° 12'. E. long. 132° 6'.

**NACABA**, a town of Japan, on the S.E. coast of the island of Nippon; 40 miles E. of Awa.

**NACACHEZ**, a town of Louisiana, on the Red river. N. lat. 32° 29'. W. long. 93° 26'.

**NACAIRES**, an instrument of music, which though often mentioned by the old poets both of France and England, it is not certain whether it was an instrument of percussion, or a wind instrument. In the Roman d'Alexandre, it is said:

"Cascun a porté trompe ou vielle atemprée,  
Nacaires et tabors de grande renommée."

Du Cange describes *nacara* to be a kind of brazen drum used in cavalry, yet Chaucer names it in the company of military wind instruments:

"Pipes, tromps, nakeres, and clariounes  
That in the bataille blowne bloody sounes."

**NACAMERI**, in *Geography*, a town of New Navarre; 190 miles S. of Casa Grande.

**NACANTA**, a town of Japan, in the island of Nippon; 20 miles N. of Mogani.

**NACATS**, a town of Japan, in the island of Ximo; 40 miles S.E. of Kokura.

**NACHEGO**, a lake of South America, in the province of Quito; 60 miles E. of Francisco de Borja.

**NACHELO**, or **NAKELO**, a sea-port town of Persia, in the province of Faristan, on the N. coast of the Persian gulf, inhabited by Arabs, independent of the crown of Persia, the inhabitants of which are chiefly employed in fishing for pearls; 170 miles S. of Schiras. N. lat. 27°. E. long. 53° 20'.

**NACHITOCES**, a French settlement of Louisiana, on the Red river, about 140 leagues N.W. of New Orleans, of small extent, but tolerably populous. Its inhabitants, like those of Louisiana, are lively, well-formed in their persons, and inured to fatigue. They often ascend their rivers with their families to the distance of four or five hundred leagues, and spend on these painful expeditions 18 or 20 months. Hunting the bear is one of their favourite pursuits, which is chiefly practised in the winter season, when this animal is particularly fat, and in condition to furnish a large quantity of oil. N. lat. 32° 11'. W. long. 93° 46'.

**NACHO**, **NACO**, or *Puerto de Cavallos*, a town of Mexico, in the province of Honduras; 30 miles N. of Gracias a Dios. N. lat. 15°. W. long. 89 36'.

**NACHOD**, a town of Bohemia, in the circle of Konigin-gratz;



gratz; 15 miles N.E. of Koniggratz. N. lat.  $53^{\circ} 18'$ . E. long.  $15^{\circ} 57'$ .

NACHSHAB, or NASAPH, a town of Bucharja; 25 miles S.W. of Samarcand.

NACIBEA, in *Botany*, a name of whose meaning or derivation no account is given. Aubl. Guian. v. 1. 95. t. 37. Juss. 199. See MANETTIA.

NACKELO, or NAKLO, in *Geography*, a town of Silesia, in the principality of Oppeln; 10 miles S.E. of Oppeln.

NACKTIGAELE, an island in the gulf of Tonquin, about 16 miles in circumference. N. lat.  $20^{\circ}$ . E. long.  $107^{\circ} 42'$ .

NACLANTUS, or NACCHIANTO, JAMES, in *Biography*, a learned Italian prelate in the sixteenth century, was born at Florence, and took the ecclesiastical habit among the Dominican monks. He filled the theological professorship in a house belonging to his order at Rome, with so high a reputation, that pope Paul III. raised him, on account of his merit, to the episcopal rank. He took part in the deliberations of the council of Trent, and died in 1569. His works consist of "Enarratio in Epistolam ad Ephesios;" "Interpretatio Epistolæ ad Romanos;" "Medulla sacre Scripturæ;" "De Papæ et Concilii Potestate;" "De Maximo Pontificatu, Maximoque Sacerdotio Christi;" and other theological treatises, which were collected, and published at Venice, in 1557, in two volumes folio.

NACONGO, in *Geography*, a river of Africa, which runs into the Atlantic, S. lat.  $5^{\circ} 15'$ .

NACORI, a town of New Mexico, in the province of Sonora; 50 miles S.E. of Pitquin.—Also, a town of New Navarre; 180 miles S.S.E. of Casa Grande.

NACRE, in *Natural History*. See PINNA.

NACRI, in *Geography*, an island in the Grecian Archipelago, about six miles in circumference; five miles E.S.E. of Patino.

NACSIVAN, or NACSHIVAN, a town of Persian Armenia, supposed to have been the ancient Artaxata, and one of the largest cities of the East. It was ruined by Abbas I. and once contained 40,000 houses. It contains considerable bazars, caravanferas, public baths, and other buildings; 85 miles S.E. of Erivan. N. lat.  $39^{\circ} 20'$ . E. long.  $45^{\circ} 25'$ .

NACZ, a town of Lithuania, in the palatinate of Wilna; 20 miles N.W. of Lida.

NACZIKOWKA, a town of Poland, in the palatinate of Braclaw; 36 miles W. of Braclaw.

NADAB, the sovereign pontiff, or high priest of the Persians, whose dignity is the same as that of the mufti among the Turks; with this difference only, that the nadab may divest himself of his ecclesiastical office, and pass to civil employment, which the mufti is not allowed to do. See МУФТИ.

The nadab takes place next after the atmash dulet, or prime minister; he has two judges under him, called the scheik and the cazi, who decide all religious matters, grant divorces, and are present at contracts and public acts, and these have deputies in all the cities of the kingdom.

NADAGONG, in *Geography*, a town of Hindoostan, in the circar of Ellichpour; nine miles E. of Omrautty.

NADAMUR, a town of Hindoostan, in Cochin; 36 miles E. of Cochin.

NADARZYN, a town of the duchy of Warsaw; 10 miles S. of Warsaw.

NADAST, a town of Hungary; 18 miles E. of Ziget.

NADEC, a town of the Birman empire, seated on the Ava; 35 miles W. of Ava.

NADEEGSDA, the most southerly of the Kurile islands, in the Russian charts.

NADELSTEIN, in *Mineralogy*. See TITANIUM.

NADEN, in *Geography*, a town of Persia, in the province of Kerman; 53 miles E. of Kabis.

NADENDAL, a town of Sweden, in the government of Abo; seven miles W. of Abo.

NADERBAR, a circar of Hindoostan, in Candesh, situated on each side of the Taptee, N. of Baglana, and E. of Guzerat.—Also, a town from which the circar derives its name; 55 miles E. of Surat.

NADGONG, a town of Hindoostan, in Goondwasah; 10 miles N. of Nagpour.

NADHEA, a town of Persia, in the province of Kerman; 80 miles N.N.E. of Sirgian.

NADIMSKOI, a town of Russia, in the gulf of Ob-skaia, into which the river Nadim runs, and the government of Tobolsk. N. lat.  $66^{\circ}$ . E. long.  $68^{\circ} 26'$ .

NADIN, a fortress of Dalmatia, situated on a mountain, and now belonging to Italy.

NADIR, a town of Egypt, situated on the W. branch of the Nile; 28 miles N.N.W. of Cairo.

NADIR, in *Astronomy*, a point in the heavens diametrically opposite to the zenith.

The word is pure Arabic, in which language it signifies the same.

The nadir is that point directly under our feet; or a point in a right line drawn from our feet through the centre of the earth, and terminating in the under hemisphere.

The zenith and nadir are the two poles of the horizon, each being  $90^{\circ}$  distant from it, consequently each in the meridian.

NADIR, *Sun's*, is the axis of the cone projected by the shadow of the earth; thus called, because that axis being prolonged, gives a point in the ecliptic diametrically opposite to the sun.

NADIR-il-kifne, in the *Turkish Offices*, the superintendant over the wardrobe.

NADIR-Shah, in *Biography*. See KOULI-KHAN.

NADONE, in *Geography*, a town of Hindoostan, in Lahore, on the Beyah; 30 miles S.E. of Nagorkote, and three miles N.W. of Bompal.

NADOR, a town of Africa, on the S.W. part of Algiers, inhabited by Arabians; 80 miles S.E. of Oran.

NADOUT, a town of Hindoostan, in Guzerat; 16 miles S. of Champaneer.

NADRAMA, a town of Africa, in the country of Biledulgerid; 45 miles S. of Beni Mezzab.

NADSAR, a mountain of Thibet. N. lat.  $27^{\circ} 26'$ . E. long.  $87^{\circ} 29'$ .

NADUM, a town of Hindoostan, in Cochin; 30 miles E. of Cranganore.

NAEFELS, a town of Switzerland, in the canton of Glaris, inhabited by Roman Catholics; four miles N. of Glaris.

NAEFF, in *Rural Economy*, a provincial term applied to the nave of a wheel of the cart or other kind.

NÆNIA, in *Mythology*, a goddess who presided over lamentations and funerals; and who had a temple near Rome. Nænia is also used for a funeral dirge or song, sung on funeral occasions.

NÆVIUS, CNEIUS, in *Biography*, an ancient Roman poet and historian, was a native of Campania, and served in the first Punic war. Of this war he wrote a history in Saturnian verse, and he was the second Roman who brought dramatic compositions on the stage. His first comedy was acted about the year 235 or 228 B.C. It gave offence to some of the leading



leading men at Rome, and on account of it he was thrown into prison. He was finally obliged to quit Rome, and died at Utica in the year 203 B.C. Only some fragments of his works have come down to modern times.

**NÆVUS**, a mole or freckle on the skin. *Nævi materni* signify the little spots, excrescences, or swellings, with which many children are born. There are two kinds, *viz.* small red tumours, which gradually increase to a large size; or brown flat marks, not rising in the least above the surface of the skin. Mr. Latta says, he once saw in a child two years old, a tumour of this kind weighing fourteen inches, which, at the time of birth, was only equal in size to a large bean, and which, for a year afterwards, did not enlarge much; but then grew to the magnitude already specified. The other species of *nævi materni*, or such as rise but little above the skin, are of various forms, and have been compared with cherries, grapes, &c. and have all been supposed to arise from some impression made on the mind of the mother during pregnancy, or at the time of conception. The settlement of this disputed point we leave to speculative writers.

Those *nævi materni*, which are mere spots, or marks, give no inconvenience, and of course do not require the interference of surgery. But such *nævi materni* as elevate themselves above the surface of the body, increase in size, and seem likely to become troublesome, should be entirely removed with a knife. Many of them seem to consist of a congeries of dilated vessels, and, after they have acquired a certain size, are apt to burst and bleed profusely. John Bell has named this kind of disease *aneurism by anastomosis*; the description and proper treatment of which we shall next consider, as the subject is not treated of in the article **ANEURISM**.

By the term "*aneurism by anastomosis*," Mr. John Bell, of Edinburgh, means a species of this disease, which resembles such bloody tumours, or *nævi materni*, as appear in newborn children, grow to a large size, and, ultimately bursting, emit a considerable quantity of blood. The aneurism by anastomosis often affects adults, increasing from an appearance like that of a mere speck, or pimple, to a formidable disease, and being composed of a mutual enlargement of the smaller arteries and veins. The disease originates from some accidental cause; is marked by a perpetual throbbing; grows slowly, but uncontrollably; and is rather irritated, than checked, by compression. The throbbing is at first indistinct, but when the tumour is perfectly formed, the pulsation is very manifest. Every exertion makes the throbbing more evident. The occasional turgid states of the tumour produce sacs of blood in the cellular substance, or dilated veins, and these sacs form little tender, livid, very thin points, which burst, from time to time, and then, like other aneurisms, this one bleeds so profusely, as to induce extreme weakness.

The tumour is a congeries of active vessels, and the cellular substance, through which these vessels are expanded, resembles, as Mr. John Bell describes, the gills of a turkey cock, or the substance of the placenta, spleen, or womb. The irritated and incessant action of the arteries fills the cells with blood, and from these cells it is re-absorbed by the veins. The size of the swelling is increased by exercise, drinking, emotions of the mind, and by all causes which accelerate the circulation.

Mr. John Bell states, that the hæmorrhage from the aneurism by anastomosis usurps, in the female subject, the place of menstruation.

"This aneurism," observes the above writer, "is a mere congeries of active vessels, which will not be cured by opening it; all attempts to obliterate the disease with caustics, after a simple incision, have proved unsuccessful, nor does

the interrupting of particular vessels, which lead to it, affect the tumour; the whole group of vessels must be extirpated. In varicose veins, or in aneurisms of individual arteries, or in extravasations of blood, such as that produced under the scalp from blows upon the temporal artery, or in those aneurisms, produced in schoolboys by pulling the hair, and also in those bloody effusions from blows on the head, which have a distinct pulsation, the process of cutting up the varix, aneurism, or extravasation, enables you to obliterate the vessel and perform an easy cure. But, in this enlargement of innumerable small vessels, in this aneurism by anastomosis, the rule is 'not to cut into, but to cut it out.' These purple and ill-looking tumours, because they are large, beating, painful, covered with scabs, and bleeding, like a cancer in the last stage of ulceration, have been but too often pronounced cancers! incurable bleeding cancers! and the remarks which I have made, while they tend, in some measure, to explain the nature and consequences of the disease, will remind you of various unhappy cases, where either partial incisions only had been practised, or the patient left entirely to his fate." See John Bell's *Principles of Surgery*, vol. i.

Mr. Abernethy cured a *nævus maternus* upon a child's arm by means of pressure with a bandage. See his *Surgical Works*.

A tumour of the same nature, situated in the orbit, and causing a displacement of the eye, violent headachs, &c. was cured by tying the carotid artery of the same side. See *Medico-chirurgical Transactions*, vol. ii.

**NAFTA**, in *Geography*, a town of Africa, in Biledulgerid.

**NAFTMIAN**, an island in the Caspian sea, in the gulf of Balkan. N. lat. 40° 45'.

**NAFWALSIO**, a town of Sweden, in the province of Smaland; 33 miles S.E. of Jonkiöping.

**NAG**, a provincial term applied to a horse of a small size, for the saddle: this sort of horse is very useful for many purposes of husbandry, when light labour is required to be performed. See **HOBBY**.

**NAGA**, in *Geography*, a town of Japan, in the island of Ximo; 5 miles N. of Nangafaki.

**NAGACOIL**, a town of Hindoostan, in the circar of Guntoor; 20 miles N.N.E. of Junaconda.

**NAGAI**, an island in the North Pacific ocean, near the W. coast of North America, so named by the Russians. N. lat. 55° 10'. E. long. 199° 14'.

**NAGALAVARAM**, a town of Hindoostan, in Madurâ; 32 miles E. of Coilpetta.

**NAGAMUNGALUM**, a town of Hindoostan, in Myfore; 23 miles N. of Seringapatam. N. lat. 12° 59'. E. long. 76° 40'.

**NAGAR**, a town of Hindoostan, in Mewat; 20 miles E. of Cottilah.

**NAGARA**, a town of European Turkey, in Romania, near the Straits; 10 miles S.W. of Gallipoli.

**NAGARITZ**, a town of Thibet; 42 miles S. of Lassa.

**NAGATCH**, a town of Hindoostan, in Marawar; 9 miles N.N.W. of Ramanadporum.

**NAGAVSKAIA**, a town of Russia, in the country of the Cossacks, on the Don; 148 miles E.N.E. of Azof.

**NAGAZ**, or **NUGHZ**, a town of Candahar, near the river Cow-mull; repaired or rebuilt by Timur Bec; 58 miles E.S.E. of Ghizni. N. lat. 33° 16'. E. long. 69° 31'.

**NAGED**, a town of Persia, in Faristan; 27 miles S.S.W. of Schiras.



**NAGEIA**, in *Botany*, Gært. v. 1. 191. t. 39, a genus established by that botanist, upon the *Nagi* of Kämpfer, Amoen. Exot. 773. t. 874, its name being formed from that Japanese word. Gærtner himself remarks that this plant differs but little in the characters of the fruit from *Myrica*, to which other writers have referred it. See *MYRICA*.

**NAGEMUL**, in *Geography*, a town of Hindoostan, in Myfore; 30 miles N.N.W. of Seringapatam.

**NAGEMULUS**, in *Ichthyology*, a name given by some of the German authors to the fish called by Willughby and others, the *lucio-perca*, or *pike-perch*. See *PERCA Lucio-perca*.

**NAGERAN**, in *Geography*, a town of Arabia, in the province of Yemen; 10 miles N.W. of Saade.

**NAGGERA**, a town of Hindoostan, in Oude; 40 miles W. of Kairabad.

**NAGGERY**, a town of Hindoostan, in the Carnatic; 10 miles S.E. of Bomrauzapollam.

**NAGGUR**, a town of Hindoostan, in Oude; 16 miles N. of Lucknow.

**NAGI**, in *Botany*, a much admired Japanese tree, planted frequently in the courts of houses. See *NAGEIA* and *MYRICA*.

**NAGLES MOUNTAINS**, in *Geography*, a ridge of mountains in the county of Cork, Ireland, extending some miles E. and W. south of the river Blackwater.

**NAGLIANO**, a town of France, in the department of the Tanaro; 4 miles N. of Alba.

**NAGO**, a small island in the gulf of Bothnia, near the S.W. coast of Finland. N. lat.  $60^{\circ} 22'$ .

**NAGODIN**, a town of European Turkey, in Servia; 16 miles W.N.W. of Widdin.

**NAGOES**, a tribe of Whidah negroes on the Slave coast of Africa, whose language, though understood by the Papaws, or Whidah negroes, differs in many particulars from the Whidah language.

**NAGOJA**, a town of Japan, in the island of Nippon; 80 miles E. of Meaco.

**NAGOLD**, a town of Wurtemberg, on a river of the same name, in the Black Forest, near which is a medicinal spring; 22 miles S.W. of Stuttgart. N. lat.  $48^{\circ} 30'$ . E. long.  $8^{\circ} 47'$ .

**NAGONE**, a town of Hindoostan, in Bundelcund; 26 miles S.E. of Pennah.

**NAGOORDILL**, a town of Hindoostan; 10 miles S.E. of Travancore.

**NAGOR**, *Antelope Redunca*, in *Zoology*, the antelope with a reddish colour, stiff upright hair, and the horns bent forwards at the ends. Schreber. This is the red antelope of Pennant. It inhabits Senegal, and at the Cape of Good Hope. Its length is about four feet, its height two feet three inches, the horns about five inches and a half long, with two slight smooth rings at the bases, and bent gently forwards: the ears are almost as long as the horns: the general colour is a pale reddish, palest on the chest. This species, according to Gmelin, is the *Knuus* of Ælian.

**NAGORBUSSY**, in *Geography*, a town of Hindoostan, in Bahar; 16 miles S. of Durbungah.

**NAGORCOTE**, or *Kote Kangrab*, a fortress and celebrated pagoda of Hindoostan, in the country of Lahore; 86 miles N.E. of Lahore. N. lat.  $32^{\circ} 20'$ . E. long.  $75^{\circ} 48'$ .

**NAGORE**, or, as it is sometimes called, *Birboom*, a town of Bengal, in the circar of Birboom; 100 miles N.W. of Calcutta. N. lat.  $23^{\circ} 37'$ . E. long.  $87^{\circ} 26'$ .—Also, a circar of Hindoostan, in the country of Agimere;

bounded on the N. by the foubah of Delhi and Moulton; on the E. by Mewat and Jyenagur; on the S. by the circars of Agimere and Joodpour; and on the W. by the circar of Bickaneer.—Also, a town in this last mentioned circar; 42 miles N.W. of Agimere. N. lat.  $27^{\circ} 9'$ . E. long.  $74^{\circ} 48'$ .—Also, a town in the Carnatic; 15 miles S. of Tranquebar.

**NAGORPAL**, a town of Hindoostan, in Lahore; 27 miles N.N.E. of Jallindar.

**NAGORSKOI**, a town of Russia, in the government of Tobolsk, on the Oby; 92 miles S.S.E. of Berezov.

**NAGOWRA**, a town of Hindoostan, in Oude; 35 miles E. of Nidjibabad.

**NAGPOUR**, a circar of Hindoostan, bounded on the N. by Teree and Ramgur, on the S. by Silhee and Tomar, on the E. by Orissa, and on the W. by Orissa, and the circars of Chuta and Palamow; about 40 miles long, and 30 broad. The capital is Doefa.

**NAGPOUR**, a town of Hindoostan, the capital of the circar of Goondwana, or, as it is now called, the province of Nagpour, in the foubah of Berar, is a city of modern date; and though very extensive and populous, is meanly built, and is open and defenceless, except only that it is guarded by a small citadel of inconsiderable strength. It is the residence of the chief of the eastern Mahratta state. The country about it is fertile and well cultivated, interspersed with hills of a moderate height; but the general appearance of the country at large, and particularly between Nagpour and Bahar, is that of a forest, thinly set with villages and towns. N. lat.  $21^{\circ} 10'$ . E. long.  $79^{\circ} 46'$ .

**NAGRAGINSKOI**, a town of Russia, in the government of Tobolsk, on the Konda; 176 miles N. of Tobolsk.

**NAGREE**, a town of Hindoostan, in the circar of Chandail; 32 miles E. of Makoonda.

**NAGROTAH**, a town of Hindoostan, in Lahore; 22 miles N. of Jummoo.

**NAG'S HEAD**, a cape on the S. end of the W. coast of the island of St. Christopher. N. lat.  $17^{\circ} 20'$ . W. long.  $63^{\circ} 33'$ .

**NAGUALAPA**, or *St. PEDRO*, a river of Mexico, which passes by Colima, in the province of Mechoacan, and runs into the Pacific ocean. N. lat.  $19^{\circ} 30'$ .

**NAGUARACHI**, a town of New Mexico, in the province of Hiaqui; 140 miles E.N.E. of Riochico.

**NAGURKEARY**, a town of Bengal; 38 miles S.S.E. of Curuckdeagh. N. lat.  $23^{\circ} 53'$ . E. long.  $86^{\circ} 36'$ .

**NAGYBANIA**, a metal town of Hungary, and one of the royal free towns, the gold and silver mines of which have been productive; 30 miles N. of Zamar.

**NAGY-CAROLY**, a town of Hungary, with a castle; 12 miles S.W. of Zamar.

**NAGYFALU**, a town of Hungary, near the Theyfs; 3 miles E.S.E. of Tokay.

**NAGYKETSKY**, a town of Hungary; 8 miles N.E. of Gros Wardein.

**NAGYMYHALA**, a town of Hungary; 18 miles W.S.W. of Ungvar.

**NAGYSOLO**, a town of Hungary; 12 miles E.S.E. of Munkacz.

**NAHANT POINT** forms the N.E. point of Boston harbour, in Massachusetts; 9 miles E.N.E. of Boston. N. lat.  $42^{\circ} 27'$ . W. long.  $70^{\circ} 57'$ .

**NAHANTIK**, a bay of the state of Connecticut; 3 miles W. of the mouth of the Thames.

**NAHAR el Berd**, a river of Syria, the ancient *Eleutherus*, which runs into the Mediterranean; 9 miles N. of Tripoli.

NAHARLYK,



NAHARLYK, a town of Poland, in the palatinate of Kiev; 24 miles E. of Bialacerkiew.

NAHAR-MALEK, a town of the Arabian Irak, near the Euphrates. N. lat.  $31^{\circ} 20'$ . E. long.  $45^{\circ} 30'$ .

NAHARVALI, or NAHARVALES, a people of Germany, who had a consecrated grove, whose priest was dressed like a woman. The Romans believed that the gods worshipped in this grove were Castor and Pollux, as they were both brothers, and both young. See Tacit. de Mor. Germ. Num. 45.

NAHEL, or MAHAM, a town of Arabia, in the province of Oman; 50 miles N.N.W. of Oman. N. lat.  $24^{\circ} 20'$ .—Also, a town of Egypt; 16 miles S.E. of Cairo.

NAHIA, a town of Persia, in the province of Kerman; 70 miles S. of Sirgian.

NAHIL, a river of Africa, which rises in the desert of Barca, and runs into the Mediterranean, N. lat.  $32^{\circ} 10'$ . E. long.  $40^{\circ} 10'$ .

NAHR el Antar, a town of the Arabian Irak, on the Euphrates, the residence of an Arabian scheick; 5 miles N. of Corna.

NAHR Teri, a town of Persia, in the province of Chufistan; 20 miles S.E. of Ahuaz.

NAHRAIM, EL, a town of Asiatic Turkey, in the province of Diarbekir, on the Khabur; 40 miles N.E. of Kerkisieh.

NAHUPO, a town of Peru, in the Audience of Quito; 45 miles W. of St. Joachim de Omaguas.

NAHUM, or, *the Prophecy of NAHUM*, a canonical book of the Old Testament. Nahum, the seventh of the twelve lesser prophets, was a native of Elkoshai, a little village of Galilee. The subject of this prophecy is the destruction of Nineveh, which he describes in the most lively and pathetic manner: his style is bold and figurative, and can hardly be exceeded by the most perfect masters of oratory. His prophecy forms a regular and perfect poem; the exordium is not merely magnificent, it is truly majestic: the preparation for the destruction of Nineveh, and the description of its downfall and desolation, are expressed in the most vivid colours, and are in the highest degree bold and luminous. This prophecy was verified at the siege of that city, by Asyages, in the year of the world 4378, 622 years before Christ.

The time of Nahum's death is unknown; the Greek meonologies, and the Latin martyrologies, place his festival on the first day of December.

NAHUNKEAG, in *Geography*, a small island of America, in Kennebeck river, 38 miles from the sea. The name denotes, in the Indian language, the place where eels are taken.

NAIA, in *Zoology*, the name of a species of coluber, the scuta of whose abdomen are one hundred and ninety in number, and the squamæ of the tail sixty.

NAJAC, in *Geography*, a town of France, in the department of the Avignon, and chief place of a canton, in the district of Villefranche, on the Aveyron; nine miles S. of Villefranche. The place contains 2181, and the canton 9040 inhabitants, on a territory of 185 kilometres, in 17 communes.

NAIADES, in *Botany*, a natural order of plants, the 6th in Jussieu's first class, and so named by him, not only from *Naias*, which is one of them, but because they are inhabitants of ponds and rivulets.

The character of the class is to have no cotyledons; that of the order is thus given.

*Calyx* entire or divided, superior or inferior, rarely wanting. *Stamens* definite (perhaps inserted into the calyx).

*Germen* superior or inferior, single or four-fold; style simple to each germen, rarely double, or none at all; stigma one or many. *Seeds* solitary or several, either naked and superior, or enclosed in a pericarp, which is either superior or inferior. *Leaves* generally opposite, or whorled. *Flowers* in some cases hermaphrodite, in others monoecious or dioecious. *Plants* all herbaceous, and, except *Saururus*, aquatics.

Section 1, fruit inferior, contains only *Hippuris*.

Seçt. 2, fruit superior, with one or four seeds, consists of *Chara*, *Ceratophyllum*, *Myriophyllum*, *Naias*, *Saururus*, *Aponogeton*, *Potamogeton*, *Ruppia*, *Zanichellia*, and *Callitriche*.

Seçt. 3, fruit superior, with a small, but indefinite, number of seeds, consists of *Lemna* only, called by Jussieu *Lenticula*.

The characters of this order are vague, and the author seems not satisfied with it himself. He hints that several of its genera probably ought to be removed from the *Acotyledones*. (See MYRIOPHYLLUM.) Mr. Brown, Prodr. Nov. Holl. v. 1. 345, considers *Naias*, *Lemna*, and *Chara* as allied to the order of HYDROCHARIDES; see that article.

NAIADS, or NAIDS, *Naiades*, derived from *ναῖω*, *I flow*, or from *ναίω*, *I inhabit*, in *Mythology*, a sort of nymphs, or heathen divinities, supposed to preside over fountains and rivers.

The Naiads had their sacrifices sometimes of goats and lambs, with libations of wine, honey, and oil, and frequently of nothing but milk, fruits, and flowers; and their festivals, in the rustic ceremonies of which, milk, honey, and oil flowed in abundance.

Strabo says, the Naiades were priestesses of Bacchus.

What we learn of them in general is, that they were supposed to live in the palaces of the presiding deities of fountains, lakes, and rivers. We have the names of no less than sixteen of these deities, given us by Virgil, Georg. iv. ver. 336 to 340; and 343 to 345, in his account of Cirene's apartment only, in the watery palace of Peneus: and Ovid, lib. iii. el. 6. ver. 64, speaks of a hundred, at least, in the river Anio. They had often a name from the particular river they inhabited. They are described with long, bright hair, flowing down their shoulders; their faces should have a shining, humid look, not unlike the Venus Anaduomené, of Apelles; their shape should be fine, and their limbs well turned. Their robes, when they wear any, for they are most commonly quite naked, should be of a greenish cast; varied at pleasure, some into lighter, and some into darker shades; and so thin, that you might discover all the turn of their limbs, and the fineness of their skin through them. They have sometimes little flying veils, in gems of the ancients, over their heads; like those goddesses of the air, which the Romans call Auræ, and which we call Sylphs. It was the usual employment of the Naiads to attend at feasts, and they seem to have been little better than so many domestics to the presiding water-deities. Spence.

NAIANT, or NATANT, *q. d.* swimming; a term in *Heraldry*, used in the blazoning of fishes, when drawn in an horizontal posture; fess-wise, or transversely, across the escutcheon; that being their natural swimming posture.

NAJARA, in *Geography*, a town of Spain, in Old Castile, containing three churches and three convents; 36 miles E. of Burgos. N. lat.  $42^{\circ} 20'$ . W. long.  $2^{\circ} 45'$ .

NAIAS, in *Botany*, so named by Linnæus, from *ναίω*, *I flow*, or water nymphs, because it grows floating in clear streams.—Linn. Gen. 512. Schreb. 671. Willd. Sp. Pl. v. 4. 331. Ann. of Bot. v. 2. 46. Mart. Mill. Dict. v. 3. Brown. Prodr. Nov. Holl. v. 1. 345. Juss. 19. Lamarck



Illustr. t. 799. Michaux Boreal-Amer. v. 2. 220. (Fluvialis; Vaill. in Mem. de l'Acad. des Sciences for 1719. Mich. Gen. 11. t. 8. Caulinia; Willd. Sp. Pl. v. 4. 182. Ann. of Bot. v. 2. 48.)—Class and order, *Monoecia Monandria*. Nat. Ord. *Inundata*, Linn. *Naiades*, Juss. *Hydrocharides*, Brown.

Gen. Ch. Male, *Cal.* Perianth of one leaf, tubular, abrupt at the base, tapering upwards, divided into two reflexed, oblong, revolute segments. *Cor.* of one petal; tube slender, much longer than the calyx; limb bell-shaped, in four equal, lanceolate, revolute segments. *Stam.* Filament usually wanting; anther solitary, oblong, erect.

Female, *Cal.* and *Cor.* none. *Pist.* Germen oblong, taper-pointed; style awl-shaped, short; stigmas two or three, undivided, acute, permanent. *Peric.* Capsule elliptic-oblong, of one cell, not bursting, crowned with the style. *Seed* solitary, inverted, oblong.

Eff. Ch. Male, Calyx sheath-like, cloven. Corolla of one petal, four-cleft. Anther nearly sessile.

Female, Calyx and Corolla wanting. Stigma two or three, undivided. Capsule with one seed.

Obf. There is some contrariety in the descriptions of the above authors, which we have had no opportunity of removing by an actual inspection of the flowers of this obscure genus. Mr. Brown is our guide for uniting the *Cavolina* of Willdenow to *Naias*; but whether the calyx and corolla of the male flowers of the former are actually wanting, or are merely deciduous, we have no information. In other respects these genera appear to agree too precisely to be, by any means, distinguished from each other, nor is there the smallest difference of habit between them.

1. *N. marina*. Marine Naias. Linn. Sp. Pl. 1441. Fl. Suec. 345. (N. monosperma; Willd. Sp. Pl. v. 4. 331. *Fluvialis latifolia*, fructu minus obtuso, monospermo; Mich. Gen. 11. t. 8. f. 2. F. pisana, foliis denticulatis; Bauh. Hist. v. 3. 771, the broad-leaved figure.)—Leaves opposite or ternate, erect, linear, deeply toothed.—Native of lakes and ditches, especially near the sea in Italy; and in the fresh waters of Germany, Switzerland, &c. In the sea itself on the coast of Sweden. Mr. Menzies gathered it in O-why-hee, and Commerçon in the isle of Bourbon. The whole plant floats under water, having the slender branched stem, and narrow pellucid leaves of a *Potamogeton*. The latter grow two or three together, sessile or somewhat sheathing, at each joint, and are from an inch to an inch and a half long, linear, with very sharp teeth or ferratures, and very deep intermediate sinuses. *Flowers* axillary, sessile, solitary, minute. *Capsule* elliptical, not a quarter of an inch long, single-seeded.—This was the only species known to Linnæus. He originally considered it as monoecious, but was induced, by the observations of Bernard de Jussieu, to remove the genus to *Dioecia*, which however every other person has found to be a mistake.

Micheli describes another species, t. 8. f. 1, as having four seeds, and some soft teeth upon the stem. Willdenow trusting, very allowably, to this excellent author, has adopted this by the name of *N. tetrasperma*, but it appears to us to want confirmation. We can find but one seed in any specimen, that has fallen in our way, from any part of the world, and this agrees with Mr. Brown's ideas of the genus.

2. *N. minor*. Lesser Naias. Allion. Pedem. v. 2. 221. (*Caulinia fragilis*; Willd. Sp. Pl. v. 4. 182. Ann. of Bot. v. 2. 49. t. 1. f. 2. *Fluvialis minor*, foliis angustissimis denticulatis, deorsum reflexis, fructu acuto tenuiori monospermo; Mich. Gen. 11. t. 8. f. 3. F. pisani, foliis denticulatis; Bauh. Hist. v. 3. 771, the narrow-leaved figure.)—Leaves

opposite or ternate, linear-awl-shaped, recurved, rigid, with triangular spinous teeth.—Native of lakes and ditches in Italy, France, and Germany. We have also specimens gathered in Switzerland by M. du Cros, but Haller knew it not; the former, which is his No 556, standing on the authority of Lachenal alone, who found it near Basil. This species is much smaller than the preceding, and, as Willdenow observes, remarkably brittle. One of our Swiss species has a considerable earthy incrustation, like what is usual in *Chara*. The leaves are more or less recurved, strongly toothed, but so narrow that there is no room for any intermediate sinuses. *Capsule* of a more slender figure than in *N. marina*.

3. *N. indica*. Indian Naias. (*Caulinia indica*; Willd. Sp. Pl. v. 4. 182. Ann. of Bot. v. 2. 50. t. 2.)—Leaves opposite or ternate, linear-awl-shaped, wavy, erect; the younger ones with bristly teeth. *Stipulas* fringed.—Native of pools at Tranquebar, in the East Indies, where our specimens, in fruit, were gathered in 1799, by the Rev. Dr. Rottler. This has much the aspect of some of the most narrow-leaved Pondweeds, but the leaves are furnished with very fine bristly deciduous teeth, so as to seem a miniature resemblance of *Fucus aculeatus*, nor are there any intermediate sinuses. The membranous *stipulas*, attached to the base of each leaf, are bearded, or fringed at the summit. *Capsule* not half the size of the former, elliptical.

4. *N. tenuifolia*. Fine-leaved Naias. Br. Prodr. Nov. Holl. v. 1. 345.—“Leaves opposite, linear-awl-shaped, with bristly teeth. *Stipulas* fringed. Calyx of the male flowers entire at one side. Anthers stalked, of one cell.”—Found near Port Jackson, as well as in the tropical part of New Holland, by Mr. R. Brown, who doubts whether it be truly distinct from the third species. We have seen no specimen.

5. *N. striata*. Striated Naias.—Leaves opposite or alternate, linear-awl-shaped, with bristly teeth. *Stipulas* abrupt, toothed. *Capsule* longitudinally striated.—Gathered in the ditches of Lombardy, in 1787. The habit of this is very near *N. indica*, nor do we find much distinction in the leaves. The *stipulas* are rather toothed than fringed, and we think there is a clear difference in the *capsule* of the present being marked with numerous longitudinal ribs, which, added to the difference of their native countries, induces us to separate the two species.

6. *N. flexilis*. Short-leaved Naias. (*Cavolina flexilis*; Willd. Sp. Pl. v. 4. 183. Ann. of Bot. v. 2. 50. t. 1. f. 1.)—Leaves whorled, linear; entire in their lower part; minutely toothed, and spreading, at the extremity. Sent by the Rev. Dr. Muhlenberg, from pools and ditches near Lancaster, in Pennsylvania. It is readily known from all the rest by its leaves growing from three to six at each joint, and their being of a broader shorter figure, entire, except near the extremity, where they are minutely and copiously toothed, but not sinuated. The fruit is elliptic-oblong, smooth. *Herb* partly encrusted with an earthy deposition.

NAIBAY, in *Geography*, a town of Nubia; 126 miles S. of Syene.

NAID-CHOKEY, a town of Hindooستان, in the Carnatic, near the coast of Coromandel; 25 miles N. of Pullicate.

NAILING of Cannon, the driving of a nail, or iron spike, by force into the touch-hole of a piece of artillery; so as to render it for some time useless to the enemy.

NAILLERS, in *Geography*, a town of France, in the department of the Vendée; 9 miles W. of Fontenay le Comte.

NAILLOUX, a town of France, in the department of the



the Upper Garonne, and chief place of a canton, in the district of Villefranche; 6 miles S.W. of it. The place contains 1198, and the canton 4025 inhabitants, on a territory of 130 kilometres, in 8 communes.

**NAILS**, in *Anatomy*, a kind of horny excrescences, growing over the ends of the fingers and toes of men, and several other animals; much of the same nature with the hoofs of others. See **INTEGUMENTS**.

The Romans were very curious in the cutting and forming the nails, and had it done by artists, who made an employment of it.

The Chinese doctors and literati pique themselves on the excessive length of their nails. F. le Compte says, some of them wear nails nearly as long as their fingers.

**NAILS of Animals.** Under this head may be comprised the human nails, and the claws, talons, and hoofs of animals. These substances differ from horn; the latter containing more residual matter, similar to that of bone. Horn and nails differ from bone; the former containing a quantity of albumen, which does not appear in the latter. Hair and feathers differ from nails and horn, in containing more albumen, and less gelatine and residual matter. Nails and hoofs, like horn, are capable of extension, when pressed in a mould, heated to about 500°; but inasmuch as they contain less phosphat of lime, they possess this property in a higher degree. Hoofs, in consequence of this, have been used with much success in making combs, snuff-boxes, and in manufacturing cutlery. When these substances are subjected to the destructive distillation, they afford water, a thick animal tar, carbonat of ammonia, carburetted hydrogen gas, and coaly matter.

The relative quantities of albumen contained in horn, nails, hairs, feathers, &c. may be duly appreciated by nitric acid a little diluted. It is well known that some animal substances are changed to a yellow colour by nitric acid; but it is not so well known, that this change is confined to the albumen alone, when the acid is a little diluted. It will be found that silk, hair, wool, and feathers, are very susceptible of this change; and the epidermis, which abounds with albumen, is equally liable to become yellow by the agency of this acid. It will be found, however, that pure gelatine does not change in colour, except the acid be very concentrated; in which case, the substance undergoes a partial combustion. All the substances above mentioned, as well as horn and nails, may be stained of a beautiful yellow, with two parts of water to one of strong acid; at the same time, ivory, bone, and isinglass, are not changed in colour by the same. See **HORN, SHELLS, and SCALES**.

**NAILS**, in *Building*, &c. are little metalline members, serving to bind or fasten the parts together, &c.

The several kinds of nails are very numerous. As *back* nails, made with flat shanks to hold fast, and not open the wood. *Clamp* nails, those proper to fasten the clamps in buildings, &c. *Clasp* nails, whose heads are flattened, and clasping and sticking into the wood, render the work smooth, so as to admit a plane over it: the most common in building are distinguished by 10d., 20d., 2s., &c. *Clench* nails, those used by boat, barge, &c. builders, with bores or nuts, and often without: for fine work, they are made with clasp heads, or with the head beat flat on two sides. *Clout* nails, those ordinarily used for nailing on of clouts to axle-trees; they are flat-headed nails, and iron work is usually fixed with these nails. *Deck* nails, those proper for fastening of decks in ships, doubling of shipping, and floors laid with planks. *Dog* nails, or *j bent* nails, proper for fastening of hinges to doors, &c. *Flat* points are of two kinds, viz. *long*, much used in shipping, and proper where there is oc-

casion to draw and hold fast, yet no necessity of clenching; and *short*, which are fortified with points, to drive into oak, or other hard wood. *Lead* nails, used to nail lead, leather, and canvas, to hard wood: these are *clout* nails dipped in lead or folder. *Port* nails, commonly used to nail hinges to the ports of ships. *Ribbing* nails, used to fasten the ribbing, to keep the ribs of ships in their place in building. *Rose* nails are drawn four-square in the shank, and commonly in a round tool. *Rother* nails, chiefly used to fasten rother-irons to ships. *Scupper* nails, much used to fasten leather and canvas to wood. *Sharp* nails, much used, especially in the West Indies, made with sharp points and flat shanks. *Sheathing* nails, used to fasten sheathing-boards to ships: the rule for their length is, to have them full three times as long as the board is thick. *Square* nails, of the same shape as *sharp* nails; chiefly used for hard woods. *Brads*, long and slender, without heads, chiefly used for thin deal work, to prevent splitting. To which may be added *tacks*; the smallest serving to fasten paper to wood; middling, for wool-cards and oars; and larger, for upholsterers and pumps. They are distinguished by the names of white *tacks*, 2d., 3d., and 4d. *tacks*.

Nails are said to be toughened, when too brittle, by heating them in a fire-shovel, and putting some tallow or grease among them.

Nails are sold six-score to the hundred.

**NAILS, Manufacture of.** The immense consumption of these articles, in all the mechanic arts and trades, cause their fabrication to be a considerable branch of national manufacture. It is chiefly carried on in Staffordshire, in the neighbourhood of Dudley, Wolverhampton, and Birmingham: indeed it is the principal consumption of the malleable iron made in that part of England. The iron used in the nail trade is of the cheapest sort, chiefly made in the Puddling furnaces, and worked by rollers instead of a forge-hammer. (See **IRON**.) This metal is, by repeated rolling, reduced into small thin bars, which are then passed through the grooves of the slitting-rollers, and thus divided or slit into three, four, five, or six small square rods, of a proper size to make nails. (See **ROLLING-MILL**.) These, which are called nail rods, are a very extensive article of trade. The nailers reside chiefly in the cottages, where the women and children assist in the labour. They employ forges such as are used by smiths; but the bellows are very lightly loaded, so that a very small motion given to them now and then will blow sufficiently to heat the rods; two, three, or four of which, according to their size, are always kept in the fire together: and when any one has a good red heat, the nailer takes it out of the fire, and, battering it on the anvil, brings it to a sharp square point at two or four strokes; he then applies it over the edge of a chisel, fixed on the anvil, and by striking a single blow on the rod, cuts off a sufficient length to make a nail, which falls into a tin pan; then he makes another, and cutting it off likewise, returns the end of the rod to the fire for another heat: now, with a pair of tweezers, like fugar-tongs, he takes up the nail, and introduces its point into a square tapering hole, made across through the end of an iron tool or mould; by striking a blow or two on the end of the iron, he flattens it down, and forms a head, the figure of which is determined by the number and direction of the blows given it. This process is conducted with a surprising rapidity, as the nailers, by long practice, acquire a mechanical habit of forming a complete nail by a certain number of strokes, so as never in the course of an hour to make an unnecessary movement. For large nails they can only make one, and cut it off, at each time they take the iron from the fire; because they would be unable



able to get the heading finished, whilst they were sufficiently hot. The length of the nail is regulated by a stop, fixed at a certain distance from the edge of the chissel, so that the point of the nail being applied to this, determines the proper place for the edge of the chissel. The size of the mould within, and the dimensions to which the point of the nail is reduced by hammering, causes the cut end to project above the surface of the mould more or less; so that the head will be thicker or thinner, and have its quantity of metal regulated, by the degree of taper given to the point: therefore, the art of the workman is displayed in striking with a due force, so that every nail shall be made of the same size, by a certain number of blows. In this manner the great number of all nails are made; but the great expence of labour has induced many manufacturers to turn their attention to inventions which would diminish the labour, so as to enable them to bring their nails to the market at reduced prices, or of a better quality. Many patents have been taken out for these inventions, some of which we shall briefly notice.

Mr. W. Finch of Wimboorne, in Staffordshire, obtained a patent in 1790, for manufacturing nails by machinery. He proposed, by means of a water or steam-mill giving motion to a main shaft or axis, to actuate a number of small hammers, to work either in a tilt or lift manner. By these hammers the nails were to be forged; but the operation was to be divided among three people for headed nails: thus, one to attend the fire, and carry the rods, as fast as they were properly heated, to the second person, stationed before the hammer, who would make the nails in the most expeditious manner, by only turning the rod about under the hammer; when cut off, they were taken by the third person, who finished the heads in a tool as above described, but by means of a hammer worked by machinery, instead of hard labour. By these contrivances, in consequence of the more speedy motion of the machine hammers, several nails were to be made at once heating of the rod; whereas by the old method, only one, or two at most, could be made; thus making a great saving of labour: and as the operation required no strength, children might easily make the largest spikes; the motion of the hammer being so regular, that they could easily acquire a dexterity in turning the rods properly to receive the blows.

In the year 1790, Mr. Thomas Clifford, of the city of Bristol, obtained two patents for the manufacture of nails of every kind. The principle on which his first invention was founded, was that of making the nails in a die, that is, by having a die, or the impresson of the nails to be cut, formed in one or more pieces of steel; and the iron, of which the nails are to be formed, is drawn or rolled into the proper form or thickness, and, by a force adapted to the purpose, pressed into a cavity or die, so as to form the nails either complete, or so nearly complete, as that they can be finished with very little labour. This operation may be done in several ways, but the one particularly recommended by Mr. Clifford is by rollers of iron or steel, and worked either by water, steam, wind, horses, &c.

The two rollers are to be made of iron, and cased with steel, each of the same diameter, which is proportioned to the length and size of the nail intended to be made. Each roller should have a cog-wheel on it, the cogs of one roller to work into those of the other, so that both the rollers may perform the same exact revolution. One half the impresson of the nail is to be cut in the surface of one roller, the other half in the other, so that the two impressons form a cavity or die of the exact form of a nail, extending the lengthways of the nail on the circumference of the rollers; and as

many impressons of the same kind may be cut in the rollers, one at the end of the other, as will complete their circumference, and continue the cavity all round the rollers; the point of one nail joining the head of the next, or the two points and two heads joining each other. The rollers must, in this as in other cases, be made to work very true and close to each other.

The mode of operation is this: a rod of iron, previously rolled or drawn to a convenient size, is to be heated, and, while hot, the end of it is put between the rollers into the cavity or die which forms the impresson of the nail. The rollers, being now put in motion, will draw the iron through, and pressing it into the cavities or dies, forms the iron into nails, one joined to the other, which must afterwards be separated, by means of instruments acting as nippers, shears, chissels, &c. The rollers, being made to work very close to each other where the edge of the nail is formed, will prevent much of the metal from being pressed out on each side of the nail, and what is pressed out may be cut off by instruments adapted to the purpose. Several pairs of rollers may be made to work together, and each pair may have several rows of dies cut on them, so as to form the impresson for several strings of nails; and a rod of iron being put into each of them, will roll out as many strings of nails with one revolution of the rollers. A pair of rollers may also have the greater part of their surface cut with dies, and a flat bed made to pass between the rollers so as to form sheet nails; all of them connected to one another by thin plates of the iron of which they are composed; and this would require each nail to be cut out, or separated from the sheet by proper instruments.

Mr. Clifford's second invention consists, 1st, in drawing the iron or other metal into a tapering or wedge-like form, according to the length and thickness of the different sizes of nails to be made. 2dly. The nails are to be cut out of those wedge-like or tapering plates by means of a punch, the face of which is made according to the size, taper, and form of the nail to be cut out; as also having a hollow bolster, the hollow or aperture of which must also be made of the size and form of a nail, and consequently to fit and receive the punch above-mentioned. The punch, thus fitted to the bed, and sliding in a proper frame to keep it steady, will, by a blow, or by pressure, cut or force part of the taper plate into and through the aperture of the bed fitting to it, and by which the nail is formed. This operation is by the manufacturers of buckles, buttons, &c. called cutting out. 3dly. To form the heads of horse nails called rose heads, and others of nearly a similar kind: after the operations of drawing and cutting out, the nail is to be put into a heading tool, also called a bed, which bed receives the nail, excepting a small portion at the thick end, out of which the head is formed by a punch or die. This die, by blow or pressure, forms the head as required, and when the nails are made of hard iron, after they are cut in the way described, the thick end is made hot before they are put into the bed, or heading tool. 4thly. Another method adopted in the manufacture of nails is, by cutting them out of or from plates of equal thickness, and afterwards to point them either by hammer or other pressure. 5thly. In making nails that are of a triangular form, the plate or strip of iron is pressed or stamped into a die, having impressons cut to the form of such nails, after which they are cut out by a punch.

About 15 years ago, a very extensive trade was established in Birmingham and Sheffield of cut brads: that kind of nails called brads having no head, or at least only a small projecting leaf on one side, was easily cut out by machinery, without the trouble of forging, but latterly the method has been improved,



## NAILS.

improved, so far as to produce all kinds of small nails. The iron is rolled out to large thin sheets, of the proper thickness to form a nail; this is cut up by strong shears into parallel slips or ribbands, the width of them being equal to the length of the intended nails, which are cut off, one at a time, from the end of the slip: the cutting line is not exactly perpendicular to the length of the piece, but rather inclined, so as to make the nail, which is cut off sharp at one end; the next time the cutting line is inclined the other way, so that the head of one nail is cut from the same edge of the slip as the point of the next, and so on alternately. The cutting is performed by the *Fly-press* (see that article), proper dies or cutters being applied in it: the lower or fixed die consists of a cutter or bar of steel set up edgewise, and one of the angles of its upper side is ground to a sharp straight edge. The slider of the press carries a die, consisting of a square bar of steel moving perpendicularly by the action of the screw, and when it is forced down, one of its flat sides applies exactly against the straight edge of the fixed cutter above-mentioned; but when the moving cutter is raised up to the highest, a part is observed, where its flat side is cut away, in such a manner as to leave a considerable space between its face and the edge of the fixed cutter at one end of the edge, but touching it at the other. By this means, when the end of a slip of iron is pressed against the face of the moving cutter in its reduced part, a short piece of the end of the slip will project over the edge of the fixed cutter, and the moving cutter being forced down by the screw of the press, the shoulder of the part which is cut away comes down upon the end of the slip, cutting it off to the line of the edge of the fixed cutter, and therefore removing a small piece from the end, which being of a proper breadth at one end, and regularly tapered away to nothing at the other, makes a very good brad. The circumstance of its being parallel in the other direction, is the great recommendation to this kind of nail, because it will drive without first making any hole in the wood and does not split: the point of a nail of this kind is like the edge of a chissel, and the length of this edge being set across the grain of the wood, when driven down it cuts through, and divides all the fibres of the wood it meets with, and by turning the divided ends of them down, as it is driven deeper, their elasticity binds the nail forcibly between them, so that this nail will hold in the wood faster than any other kind, but being parallel in the other direction, does not tend to open or split the wood in the direction of the grain.

In cutting brads by this method, the workman or woman is seated before the press, which is the same as is shewn in *fig. 1. Plate XXVII. Mechanics*, holding the handle, *a*, of its fly in the right hand, and the slip of iron in the left: by pushing the handle back, the moving cutter is raised up, and the end of the slip is pressed up to the cutter: then by drawing forwards the handle, the cutter is pressed down, carrying with it a nail, as before mentioned: the handle is then pushed back to cut another, but the slip of iron or bar must first be turned over, to bring the other side upwards: by this means, the bar will at the second time be cut with an inclination in an opposite direction to what it was the first time, so that the head of one nail will come from the same side of the bar as the point of the last, and this alternately of the whole. A woman will, by this method, cut small nails at the rate of 40 or 50 *per. minute*, and if they are intended for brads, they have a small leaf left at one side of the head in cutting, by a particular shape of the dies.

For nails which require heading, the pieces or nails, cut as before mentioned, are taken to another woman, who fixes them one at a time in a vice, over which a heavy hammer is placed, being fitted on an axis, that it may rise and fall with

precision upon the head of the nail in the vice; its weight is suspended by a wooden spring pole, and the woman, when she has fixed the nail, raises the head of the hammer a little, and then brings it sharply down on the nail, so as to head it at one blow. The shape of the head is determined by an indentation made in the face of the hammer, and its thickness depends upon the quantity which is left sticking out above the chaps of the vice.

Messrs. Wilmore and Tonk obtained a patent, in 1808, for a method of cutting nails, which they have thus described.

They take a nail rod, of a size suitable to that of the nail intended to be manufactured, and applying it to a common screw-press, mounted with proper cutters, cut off from the end of the rod two pieces at once, obliquely across the rod in one place, and directly across it in another. Two studs or tops are set up, which are attached to the press, and are moveable in the direction of the rod, for the purpose of ascertaining the length of the nail; and both studs are adjustable in the cross direction of the rod, so that the obliquity of the cut, according to the kind of nail to be made, is thereby determined, as well as the length of the nail. This is called the first operation.

The second operation is to anneal the pieces so cut off, if the iron should not be sufficiently malleable, which is done in the usual and well-known manner. The third operation is that of heading, which, for clasp head nails, consists of two parts, one for gathering, and the other for forming the head of the nail. The first part of this operation is performed by putting a piece, cut off the rod of iron as before described, into a pair of clams, leaving as much of the thick end projecting above the clams as is sufficient to form the head. These clams have steel bits let into them with sharp edges, which press only against the two opposite sides of the piece, and which have the effect of two chissels, when the punch of the press is brought down upon the piece with considerable force, and raise or gather up iron towards forming the head. The second part of this operation is to put the nail, thus prepared, into another pair of clams, having bits to correspond to the under side of the head; and the punch, having the impression of the upper side of the head engraved or sunk into it, is brought to press strongly upon the head in the clams, and thereby the clasp head is properly formed.

For nails intended to have rose heads, or any other kind of heads, except clasp heads, the first part of this heading operation is not absolutely necessary, but the bits which for clasp nails must have sharp edges, must for the other nails have blunt edges, to prevent the under-cutting. For the second part of this operation, the piece is put either into a pair of clams, or into the tool commonly called a bore, and then pressed with punches properly engraved, or sunk, according to the kind of head wanted. By the first of all these operations, the piece cut off the rod of iron is formed something like a mortise chissel. The fourth operation is to point it, which is done by putting the piece into a bed of steel, in which is cut a nick or groove having parallel sides, but the bottom rising towards the end, where the nail is to be formed; the end of the punch, which presses upon the point of the nail, is made to project more than the other part, so as to meet the corresponding part of the bed, when the punch is brought upon the nail. The groove or nick in the bed should be just wide enough to receive the nail easily, but prevent it from twisting when the impression is made. The nail is put twice into the nick, once within the chissel, from the end lying horizontal, and next turning a quarter round to press the chissel edge into a pointed form. If the nails, by the strong pressure which is necessary in this operation,



tion, should become too hard to clench, they are to be annealed in the usual way, which may be called the fifth operation. The third, fourth, and fifth operations, above described, are applied to nails, or pieces cut off from sheet or rolled iron in the ordinary way; but as, in consequence of the fifth operation, which is necessary to give them the quality of clenching, they are apt to be too soft to drive well, a sixth operation is applied, *viz.* quenching them in water when red-hot, which gives them stiffness enough to drive without rendering them too brittle to clench.

The Americans appear to have carried the invention of cutting nails by machinery to a greater perfection than has been done in this country. From some letters, published in 1810, by the American secretary to the treasury, in his report on the manufactures of that country, it appears that they have invented machines which perform the cutting and heading at one operation, and with such a rapidity, that one machine will furnish upwards of one hundred nails *per* minute: he says, "the importance of nail machinery in Massachusetts, and of all that relates to rolling and slitting-mills, with which nail machinery is immediately connected, requires that a particular account should be given of them. In old countries nails are forged, here they are cut, and it is curious to trace the progress of American genius through the various steps of this invention. Twenty years ago some men, now unknown, and then in obscurity, began by cutting slices out of old hoops, and by a common vice, gripping these pieces, headed them with several strokes of the hammer: by progressive improvements slitting-mills were built, and the shears and the heading tools were perfected, yet much labour and expence were requisite to make nails. In a little time, Jacob Perkins, Jonathan Ellis, and a few others, put into execution the thought of cutting and of heading nails by water, but being more intent upon their machinery than upon their pecuniary affairs, they were unable to prosecute the business. At different times other men have spent fortunes in improvements, and it may be said with truth, that more than a million of dollars have been expended; but at length these joint efforts are crowned with complete success, and we are now able to manufacture at about one-third of the expence that wrought nails can be manufactured for, and nails which are superior to them; for at least three-fourths of the purposes to which nails are applied, and for most of those purposes, they are full as good. The machines made use of by Odiorne, those lately invented by Jonathan Ellis, and a few others, present very fine specimens of American genius.

"To northern carpenters it is well known, that in almost all instances it is unnecessary to bore a hole before driving a cut nail; all that is requisite is, to place the cutting edge of the nail across the grain of the wood: it is also true, that cut nails will hold better in the wood. These qualities are, in some rough building works, worth twenty *per cent.* of the value of the article, which is equal to the whole expence of manufacturing. For sheathing and drawing, cut nails are full as good as wrought nails: only in one respect are the best wrought nails a little superior to cut nails, and that is where it is necessary they should be clenched. The manufacture of cut nails was born in our country, and has, within its bosom, advanced through all the various stages of infancy to manhood; and, no doubt, we shall soon be able, by receiving proper encouragement, to render them superior to wrought nails in every particular.

"The principal business of rolling and slitting-mills is, rolling nail plates; they also serve to make nail rods, hoops' tires, sheet iron, and sheet copper: in this State we have not less than twelve.

"These mills could roll and slit 7000 tons of iron a-year; they now, it is presumed, roll and slit each year about 3500 tons, 2400 tons of which, probably, are cut up into nails and brads, of such a quality, that they are good substitutes for hammered nails, and, in fact, have the preference with most people for the following reasons, *viz.* on account of the sharp corner and true taper with which cut nails are formed; they may be driven into harder wood, without bending or breaking, or hazard of splitting the wood, by which the labour of boring is saved, the nail, one way, being of the same breadth or thickness from head to point." We are informed that J. C. Dyer, esq. who has had the American machinery communicated to him, to be introduced into this country, has lately taken out patents in Great Britain, with a view of establishing the trade in this country.

NAILS were anciently used for cancelling bonds; and for this purpose they were driven through the writing: to which practice there seems to be an allusion in Col. ii. 14., where God is said "to have blotted out the hand-writing of ordinances that was against us, and to have taken it out of the way, nailing it to his cross." For the Roman ceremony of driving the annual nail, see ANNALIS CLAVUS.

NAILS, in the *Manege*. The different position of the nails of the bridle, or left hand of the horseman, gives the horse a facility of changing hands, and forming his departure and stop; by reason that the motion of the bridle follows such a position of the nails. To give a horse head, you must turn the nails downwards. To turn the horse to the right, you must turn them upwards, moving your hand to the right. To change to the left, you must turn the nails down, and bear to the left. To stop the horse, you must turn them upwards, and lift up, or raise your hand.

NAIL is also a sort of long measure, chiefly used in the commerce of cloths; containing the sixteenth part of a yard.

NAIM, in *Geography*, a town of Arabia, in the province of Oman; 80 miles N.W. of Haffek.

NAIN, a Moravian settlement on the east coast of Labrador, near the entrance of Davis's straits, S.S.W. of Cape Farewell. From observations made here in 1778, 1779, and 1780, the mean temperature seems to have been 30.54. The greatest heat observed in 1780 was 84, *viz.* in July; and the greatest cold in 1779 was -36. There is no appearance of summer before July; though the winters are said to be less severe than formerly. Kirwan's Estimate, &c. N. lat. 57. W. long. 61° 30'.—Also, a Moravian town, established in 1763, on Lehigh river, in Pennsylvania.—Also, a village of Palestine, at the foot of mount Hermon, formerly a city, celebrated for the miracle of our Saviour's restoring the son of a widow to life; 10 miles S. of Nazareth.

NAINA, a town of Bengal; 22 miles S.S.W. of Calcutta.

NAJOO, a small island in the East Indian sea, near the west coast of the island of Celebes. S. lat. 1° 29'. E. long. 124° 25'.

NAIRANGIA, formed from the Arabic *nairan*, the plural of *nair*, *light*, a kind of divination, in use among the Arabs, drawn from the several phenomena of the sun and moon.

NAIRES, NAHERS, or *Nayers*, in *Modern History*, a name which is given by the Malabarians to the military of their country, who form a very numerous class or tribe, out of which the sovereigns of Malabar choose their body-guard.

NAIRN, or INISKEEL, in *Geography*, a small post-town of the county of Donegal, Ireland, on the western sea coast,



coast, opposite to the little island of Inissteel. It is 135 miles N.W. from Dublin, and 11 N. from Killybegs.

NAIRN, a royal borough, and the county town of Nairnshire, in Scotland, is pleasantly situated on the western bank of a small river, from which it derives its name, near the coast of the Moray frith. It is a neat town, with a small, convenient harbour, which might easily be enlarged and improved; and it is believed, a plan for this purpose has been suggested by Mr. Telford, which will probably be soon put into execution. The chief street runs nearly parallel to the shore, and is intersected by a number of narrow lanes, stretching on one side towards the sea, and on the other into an extensive plain of fertile corn-fields. The gaol and town-house are placed in the middle of the principal street, and considerably injure its appearance. The houses here are in general well built, and rather elegant; but it is far otherwise in the lanes. There are two good inns in the town, and so many ale-houses and whisky-shops, that the Rev. J. Morrison says, "to mention the number might to strangers appear incredible." Nairn has undergone many changes in the course of time. Originally it stood on a different site from that which it now occupies. It was defended by a castle, which stood on an eminence called Castle-hill, but at a remote period, on a spot now covered by the sea, where, about 60 years ago, vestiges of its foundations could be seen, when the tide was low, though they are now wholly washed away. Buchanan tells us, that the more ancient castle was taken by the Danes, in the reign of Malcolm I. The one subsequently built has also been completely demolished since the year 1747, before which time it was in the custody of the Thanes of Cawdor, as hereditary constables; and the constabulary garden is still distinguished as an article in the valuation of the Cawdor estate, to the extent of 3*l.* 10*s.* Scots. At what era Nairn was removed to its present position is not recorded; nor is it known when it was first constituted a royal burgh. The earliest charter now extant is dated in 1589, and is the renewal of one granted by "Alexander;" though by which of the kings of that name is not mentioned. The revenue of the borough is very considerable, and arises from an extensive tract of moor-land let out on improving leases, from feu-duties, "and from the tolls of six annual fairs, and the weekly market." It is governed by a town-council, consisting of seventeen members: a provost, three bailies, dean of guild, and treasurer, with eleven counsellors; nine of whom form a quorum. By a late decision of the house of peers, the bailies, dean of guild, and treasurer, must be resident; but the provost and remaining counsellors may be country gentlemen. The several trades of the town are formed into one corporation. The magistrates hold a court for the trial of slight offences, and another for the recovery of small debts; besides which, there are seven county courts held in the town, *viz.* the sheriff court, the court of quarter-sessions, the court of the justices of the peace, the court of fenceholders, the courts of the commissioners of supply and of the property tax, and the court of the county lieutenancy.

In the town is an excellent school, in which the number of scholars is seldom less than an hundred; parents sending their children hither from all parts of the country, and frequently even from England. Every branch of study now in repute at the universities is taught here in perfection; and several of the most distinguished characters for science and literature in Great Britain first rose to comparative eminence in the provincial school of Nairn.

Besides the castles already mentioned, the vicinity of Nairn displays a variety of antiquarian remains. On the north-west side of the hill of Geddes are the ruins of an ancient

fortress, called Caisteil-Fionlah, or Caisteil-Fienbail, *i. e.* Castle Finlay: it is surrounded with a deep fosse. By whom, or for what purpose this edifice was erected, has not only escaped the notice of history, but even tradition is silent upon the subject. A little eastward from hence is another castle, called the Castle-of-Rait, probably built by Rait of that ilk, but at what period is uncertain. Below it is Knock-nw-gillan, at which place eighteen of the M'Kintoshes were murdered by the Cummines, who lived at Rait, on account of some grudge which subsisted between the families. At Easter-Geddes are the remains of a very ancient chapel, with a burying-ground around it, where the family of Kilravock and the lairds of Geddes have been buried for more than six centuries past. Some Roman coins have been found in this neighbourhood.

Nairn formerly gave title of baron to the family of Nairn, one of whom was attainted in 1745, for having attached himself to the interests of the Pretender.

There is no manufacture of any extent carried on in the town, which is chiefly supported by the fishery on the river, agriculture, and the number of genteel families, who either reside in it during the whole year, or occasionally visit it for the advantage of bathing. It is remarkable that in one part of the town, Erse only is spoken; while in the other parts, the inhabitants do not understand that language, but speak English in considerable purity. According to the population returns of 1801, the whole parish contained only 547 houses, and 2215 inhabitants; but in the returns of 1811, the houses are stated to amount to 632, and the inhabitants to 2504 in number. *Beauties of Scotland*, vol. iv. *Sinclair's Statistical Account of Scotland*, vol. xii. This parish is described by the Rev. P. Morrison.

NAIRNSHIRE, one of the northern counties of Scotland, is bounded on the north by the Moray frith, on the east by the shire of Elgin, and on the south and west by the county of Inverness. It extends about 20 miles in length from north to south, and 22 in breadth from east to west. These, however, are the distances of its extreme parts; but its general breadth does not exceed 12 miles. This county formed a portion of the ancient district of Moray; and, like Moray-Proprie, or Elginshire, is divided into two portions by the natural distinctions of its surface. For the breadth of from three to six or seven miles along the shores, the country is usually level and extremely fertile; but as it recedes farther from the coast, it becomes very bleak and hilly. The soil on the level grounds, on the east side of the county, is a free loam on a sandy or gravelly bottom; and on its western portion, either a rich, stiff clay, or a gravelly mould. The climate here is as favourable as in any part in Scotland, for the same reason which has been mentioned under the article Morayshire. (See MORAYSHIRE.) In the hilly parts, the climate and soil are very different from what they are along the coast; the former being cold and stormy, and the latter a poor sandy loam, full of gravel and small stones. Only a few spots, indeed, on the declivities, skirting the narrow vales, in which the rivers run, are under cultivation, or perhaps susceptible of it. Agriculture, as a science, is little understood in any part of the county, probably less so indeed than in any other in Scotland. The farms are usually small, and most generally uninclosed; and, with a few exceptions, held upon leases *ad libitum*, which can scarcely fail to retard the progress of improvement. The inferior tenants being for the most part too poor to purchase proper implements of husbandry, those they employ are of their own construction, and consequently, as may be supposed, of the rudest stamp. Sheep and black cattle are reared in considerable numbers in Nairnshire, and chiefly fed



on the natural pasturage, either in the downs along the shore, or in the moors towards the bottom of the mountains. The sheep are of the small white-faced kind, with very fine wool, which is either consumed by the farmers themselves, or sold into other districts, there being no manufacture yet established in this county.

There are few mineral substances in Nairnshire, which can be applied to any practical purpose. All the indications of coal, lead, and iron, which have induced adventurers to attempt the discovery of mines of these substances, have hitherto proved fallacious. Neither is there any lime-stone found in the county; but its absence, in an agricultural point of view, is less to be lamented, as marble exists in vast quantities at different places, and particularly in a small loch called Conan, and in the vale of Litie, where it is of the purest and most valuable kind. In this vale is the extensive heath of Hoar-moor, which Shakspeare has consecrated as classic ground, by making it the scene of the meeting of Macbeth and the weird-sisterhood, in the celebrated play which bears the name of that blood-stained usurper. In the surrounding hills are some quarries of free-stone; and in one part of the county there is also one of a dark blue-stone, which flames in the fire, but its bulk is not apparently diminished. After incineration, it does not fall down into powder, but remains solid as before.

The only rivers worthy of notice in this county are the Findhorn and the Nairn. The former takes its rise in Invernesshire, passes entirely through this county into that of Moray, and discharges itself into the sea at the bay formed by the sand-hills of Culm. The Nairn also, beginning its course from a lake in Invernesshire, flows through a considerable angle of Nairnshire, and falls into Moray frith, near the county town. This river skirts, in its progress, the western side of the field of Culloden, in which terminated the rebellion of 1745, when the hopes of the Stewart family were frustrated. There is a small salmon fishery on the Nairn, the property of Mr. Brodie of Brodie.

Nairnshire contains four entire parishes, *viz.* Ardelauch, Aultdearn, Calder, and Nairn; and parts of five others, *viz.* a part of the parish of Dyke, in the county of Moray; a part of Urquhart, in Rossshire; and a small portion of Croy, of Moy, and of Petty, all in the shire of Inverness. In the parliamentary reports of 1801, this county is stated to contain 1972 houses, and 8259 inhabitants; in 1811, the number of houses had increased to 2031, but the inhabitants are returned as amounting to 8251. There is probably some error in one of these returns. Aultdearn is a borough of barony, and is memorable as the scene of one of the most celebrated victories of the duke of Montrose over the covenanters, under lieutenant-general Hurry, in 1645. Several handsome residences are dispersed over the county, of which the chief are Brodie, Holme, Boath, Lethen, Cantray, and the Castle of Kilravock. Nairnshire is represented in parliament along with the small county of Cromarty; each county alternately electing their joint representative.

Several remains of antiquity in this county, besides those mentioned in the preceding article, may very properly claim attention. Cawdor Castle and that of Kilravock, which are both in an entire state, are objects of considerable antiquity and interest: so are likewise the ruins of Penic, Inshough, Moinefs, and Loughnadurb. Moinefs appears to have been one of the most extensive mansions in Scotland; and Loughnadurb is remarkable for having sustained a siege against kings Edward I. and II. It is situated near the centre of a deep lake, in the higher parts of the county, and almost 15 miles from any inhabited region; so that it is very difficult to

conceive a state of society which could give it importance, either in a political or military view. North-west from this castle, about four miles, in a narrow and solitary vale, in which the river Findhorn flows, stands a very curious monument of the obelisk kind, about half the height of the celebrated one near Forres. The flag of this monument is so thin, that Mr. Leslie thinks it "might be carried to some distance, by two vigorous men practised in such exercises." It is set up by the side of a cairn of stones, supposed to be piled over some grave; but whether really a memorial of the dead, or of some memorable event in history, is uncertain. Tradition, however, represents it as the monument of two lovers, a Highland chieftain and a Norwegian princess, who were drowned in the river, in the act of eloping to secure to themselves that happiness which the hostility of their families denied them. The sculpture on this obelisk is nearly the same on both sides. In the lowest compartment are two human figures, evidently in the Highland dress, in the attitude of embracing, or struggling with each other. On each of the sides is a circle in bold relief, about a foot in diameter, the surface being occupied by eight or ten small globular figures placed round a cup in the centre. The remainder of the sculpture consists mostly of foliage, tendrils, &c. This monument has no mark or emblem upon it referring to the doctrines or customs of Christianity, and is therefore presumed to be of anterior date to the introduction of that religion into Scotland. General View of the Agriculture in the Counties of Nairn and Moray, by the Rev. W. Leslie, 8vo. 1811. This is a very interesting volume, and contains much information respecting towns, villages, customs, and antiquities, in addition to the agricultural department. It is evidently the work of a man of talent and extensive reading. See also Beauties of Scotland, vol. iv.

NAIS, in *Natural History*, a genus of the Vermes Mollusca, class and order, of which the generic character is, body creeping, long, linear, pellucid, and depressed; the peduncles or feet have small bristles on each side; it has no tentacula or feelers; sometimes two eyes, and sometimes without any. There are ten species; three of them common to the stagnant waters of our country, the others for the most part found on the shores of the North seas; generally only a few lines long, and attached to the stalks of aquatic plants.

#### Species.

VERMICULARIS. This species is well represented in Plate V. *Vermes*, fig. 5—11, in its natural and magnified state; it has no lateral bristles, but the chin is bearded. It is found in stagnant waters, adhering to duck-weed; it is only about a quarter of an inch long; the head is subclavate; it has no eyes, and the peduncles have five or six bristles.

\* SERPENTINA. Body serpentine, with red spiral intestines, and triple black collar. It inhabits Europe, in stagnant waters; is about an inch in length; the peduncles are warty, with three hooked bristles. This species is finely represented in the plate already referred to.

\* PROBOCIDEA. This has single lateral bristles, and a very long proboscis. It inhabits clear stagnant waters, and is about three quarters of an inch long. (See Plate V. figs. 12 and 13.) The body is hyaline, with a blackish flexuous intestine; the segments with a single longish bristle on each side; the head is forked, and armed with a mouth and tongue; the vent is terminal, and it feeds on invisible aquatic insects.

ELINGUIS. This has single lateral bristles, and no proboscis; is met with in river water, about half an inch long,



and narrower than the last. The mouth is placed before, and is obtuse; the vent is lateral.

\* **DIGITATA.** This also has single lateral bristles, with a laciniate tail. It is found in stagnant waters, or the sandy sediment of rivers, with its head attached to the stalk of aquatic plants, and is not quite half an inch long. The body is marked with a reddish vein down the middle, and furnished beneath with a double row of very minute ciliate protuberances; it has no eyes, and the tail is rounded, and furnished with six unequal retractile processes.

**BARBATA.** Lateral bristles fasciculate, and without a proboscis. Found in the wet hollows of damp woods; not half an inch long; and it is generally met with adhering to snails. The body in the lower part is furnished with hairs; the segments with four divergent bristles on each side; it has two eyes.

**CÆCA.** This is without eyes, and has lateral warts that are bristly. Inhabits the Northern seas, and is thought to be the same as the *NEREIS Cæca*; which see.

**LITTORALIS.** This species has generally no lateral bristles, but sometimes they occur single, double, or fasciculate. Found on the sandy shores of Copenhagen. The body is long, filiform, equal, red, very fragile, and composed of numerous crowded annulations, with numerous segments, each furnished with a lateral bristle.

**MARINA.** The body of this is furnished with single lateral bristles, and furnished with an extensile tube. Found on the shores of Greenland, under marine conservæ; scarcely an inch long, and it resembles the *NEREIS Prolifera*; which see. The body is of a whitish colour, with a yellowish-grey line down the middle; the part is convex, and underneath it is flat, and pointed behind; it has two eyes.

**QUADRICUSPIDATA.** Lateral warts bifid and bristly; the abdomen is furnished with cirri; the tail is four-cleft. It inhabits the sandy coasts of Iceland, and is usually found under stones; it is about two inches and a half long. The body is composed of 104 annular segments, sometimes reddish, sometimes of a reddish-grey, with a longitudinal purple line, which is of a stronger colour beneath; it is tapering towards both ends, and flatter beneath; has neither eyes nor feelers, and its tail ends in four processes.

**NAISERRA**, in *Geography*, a town of Hindoostan, in Guzerat; 30 miles N.N.E. of Champaneer.

**NAISSANT**, in *Heraldry*, is applied to a lion, or other animal, shewing only the head, shoulders, fore-feet, and legs, with the tip of the tail; the rest of the body lying hid under the shield, or some charge, or ordinary thereon; from which it appears to be issuing or arising.

Naissant differs from issuant, as the animal in the former case issues out at the middle, and in the latter at the bottom of the field or charge.

F. Menestrier says, naissant is only used for animals, which shew the bare head as arising out of the extremity of the chief, or from above the fesse.

**NAISTON**, in *Geography*, a town of Persia, in the province of Irak; 80 miles N. of Ispahan.

**NAÏVETE'**, in *Rhetoric*, a French term denoting the highest degree of simplicity, of the import of which term, having no corresponding one in our language, it is not easy to give a precise idea. It always expresses a discovery of character. M. Marmontel, who has given the best account of it, explains it thus: "that sort of amiable ingenuity, or undisguised openness, which seems to give us some degree of superiority over the person who shews it: a certain infantine simplicity, which we love in our hearts, but which displays some features of the character that we think we

could have art to hide; and which, therefore, always leads us to smile at the person who discovers this character." La Fontaine is given as the great example of such *naïveté*. This, however, is to be understood as descriptive of a particular species only of *simplicity*; which see.

**NAKA LABEN**, in *Geography*, a town of Mingrelia; 20 miles N.W. of Cotatis.

**NAKED**, in *Architecture*. Naked of a wall, &c. is the surface of a plain, from whence the projectures arise; or which serves as a ground to the projectures.

Thus, we say, a pilaster ought to exceed the naked of the wall by so many inches; and that the foliage of a capital ought to answer to the naked of the column.

A flooring is said to be naked, before the boards are laid over the joists: the naked roofing or carcaising is applied to the roof before the tiles are laid on the rafters.

**NAKED Fire**, is a term used by chemists for an open fire; or one where the containing vessel is immediately exposed to the fire.

**NAKED Flowers**, in *Botany*, are such as are furnished with a corolla, but destitute of a calyx; such are the Tulip, Hyacinth, and many others of the Liliaceous order. Some botanists do not allow of any flowers of this description, because when only one covering is present, they are pleased to call it invariably a calyx. Jussieu therefore applies the term naked flowers to those which have no *bractea* or floral leaf.

**NAKED Leaves** are destitute of all kind of clothing or hairiness, like most of the Orchis tribe.

**NAKED Seeds** are such seeds of plants as are not inclosed in any pod, or case.

**NAKED Stems** are those which bear no leaves.

**NAKEL**, in *Geography*, a town of the duchy of Warsaw; 40 miles N.N.W. of Gnesna.

**NAKGIVAN**, a town of Persia, in the province of Arokhage; 30 miles S.S.W. of Arokhage.

**NAKIA**, a town of Syria; 10 miles N. of Acre.

**NAKIB**, in the *Oriental Dignities*, the name of an officer who is a deputy to the cadilikier, or, as he may be called, the lord high chancellor of Egypt, appointed by the grand signior. His office is to carry the standard of Mahomet.

**NAKIR**, a word used by some medical writers to express a violent flatulence which passes from one limb to another, and is always attended with pain.

**NAKKILA**, in *Geography*, a town of Sweden, in the province of Abo; 10 miles S.E. of Biorneborg.

**NAKOUS**, an Egyptian musical instrument, made like two plates of brass, and of all sizes, from two inches to a foot in diameter: they hold them by strings fastened to their middles, and strike them together so as to beat time. They are used in the Coptic churches, and in the Mahometan processions.

**NAKRA**, in *Geography*, a town of Persia, in the province of Khorasan; 9 miles N.E. of Herat.

**NAKRASH**, a town of Egypt, on a canal formed from the Nile to the lake Maræotis; 10 miles N.W. of Shabur.

**NAKVAY**, a town of Africa, in the kingdom of Yani.

**NAL la Appella**, in *Botany*, a name used in the Hortus Malabaricus to express an Indian shrub, or tree, from the roots of which they obtain an oil of a gold-yellow colour, and very agreeable smell, called *appel* oil. It is of a bitterish and sharp taste, and is in great esteem among them in pains of the head.

**NALA SUNKRA**, in *Geography*, a branch of the Indus, which



which separates from the main stream, 14 miles S.W. of Nafferpour, and runs into the sea, 30 miles W. of Booge-booge.

**NALABOO**, a sea-port on the west coast of Sumatra. N. lat.  $4^{\circ} 16'$ . E. long.  $95^{\circ} 5'$ .

**NALADIDY**, a town of Hindoostan, in Marawar; 35 miles N.W. of Ramanadporum.

**NALDOROUK**, or **NALDROOG**, a town of Hindoostan, in Dowlatabad; 76 miles E. of Vissapour. N. lat.  $17^{\circ} 27'$ . E. long.  $76^{\circ} 45'$ .

**NALIBOKI**, a town of Lithuania; 25 miles N.E. of Novogrodek.

**NALIKAN**, a town of Asiatic Turkey, in Natolia; 25 miles E. of Eski-shehr.

**NALLABIGA**, a town of Hindoostan, in Bahar; 33 miles S.W. of Bahar.

**NALLACOOD**, a town of Hindoostan, in Golconda; 21 miles S. of Combamet.

**NALLAGUNGE**, a town of Bengal; 6 miles S.W. of Chilmary.

**NALUGU**, in *Botany*. Rheede Hort. Mal. v. 2. 43. t. 26. See *LEEA Sambucina*.

**NALUS**, in *Geography*, a country and people of Africa, between the rivers Nuno, Tristao, and Rio Grande, bordering on the country of Sierra Leone; not far from the Atlantic, between  $10^{\circ}$  and  $11^{\circ}$  of N. lat.

**NAM**. See **NAAM**.

**NAMA** in *Botany*, a Greek name adopted, as it appears, without much reason, by Linnæus; nor can we offer any thing satisfactory respecting its origin or application. —Linn. Gen. 124. Schreb. 173. Willd. Sp. Pl. v. 1. 1326. Mart. Mill. Dict. v. 3. Browne Hist. of Jamaica, 185. Swartz. Obs. 109. Juss. 134. Lamarck Illustr. t. 184. Gært. t. 44.—Class and order, *Pentandria Digynia*. Nat. Ord. *Succulentæ*, Linn. *Convolvuli*, Juss.

Gen. Ch. *Cal.* Perianth inferior, of one leaf, permanent, cloven into five, lanceolate, acute, straight, spreading segments. *Cor.* of one petal, wheel or salver-shaped; tube short, limb divided into five, ovate, obtuse segments, the length of the calyx. *Stam.* Filaments five, thread-shaped, ovate at the base, inserted into the middle of the tube, shorter than the segments of the limb, and alternating with them; anthers oblong, cloven at the base, revolute, incumbent. *Pist.* Germen superior, ovate; styles two, capillary, erect, as long as the stamens; stigmas capitate. *Peric.* Capsule ovate-oblong, obtuse, compressed, furrowed on both sides, of one cell, two valves, and shorter than the calyx. *Seeds* numerous, very small, affixed to the flat receptacle in the midst of the partition.

Eff. Ch. Calyx very deeply five-cleft. Corolla five-cleft. Capsule with one cell, and two valves.

1. *N. jamaicensis*. Linn. Sp. Pl. 327. (*N. reclinata* villosa, foliis ovatis, petiolis marginatis recurrentibus, floribus foliariis; Browne Jam. 185. t. 18. f. 2.)—Native of Jamaica, in cultivated ground, as well as in waste stony places. *Root* annual, simple, thread-like. *Stem* from two to six inches in height, subdivided, procumbent, downy, branched from the axils of the leaves. *Leaves* opposite, wedge-shaped at the base, ovate, or roundish, entire, downy, their stalks decurrent. *Flowers* axillary, from two to four in a cluster, each on a separate, short stalk, small and white. —Browne remarks, "that this little plant spreads about the root; that all its parts are somewhat hairy, and that the stalk and branches are margined."

*N. zeylanica*, Linn. is now referred to **HYDROLEA**; see that article.

**NAMACUL**, in *Geography*, a town of Hindoostan, in Barramaul country; 42 miles S. of Darempoury. N. lat.  $11^{\circ} 22'$ . E. long.  $78^{\circ} 5'$ .

**NAMAGANG**, a small island in the East Indian sea. S. lat.  $6^{\circ} 45'$ . E. long.  $132^{\circ}$ .

**NAMAMTIA**, in *Ichthyology*, a name given by the French to the *manati*, or sea-cow. See *TRICHECUS Manatus*.

**NAMANDA**, in *Geography*, a town of Japan, in the island of Nippon; 32 miles S.S.W. of Iga.

**NAMAQUA**, in *Ornithology*, a species of *Tetrao* (which see), in the dry deserts of Africa inhabited by the Namaquas.

**NAMAQUAS**, in *Geography*, a people of Africa, near the W. coast, N. of the Cape of Good Hope.

**NAMASKETT**. See **MIDDLEBOROUGH**.

**NAMATION**, **NAMATIO**, in *Law*, the act of distraining or taking a *distress*; which see. See also **NAAM**.

In Scotland the word is particularly used for impounding. See **POUND**.

**NAMBALLA**, in *Geography*, a town of Peru, in the audience of Quito; 40 miles N.W. of Jaen de Bracamoros.

**NAMBE**, a town of New Mexico; 40 miles N. of Santa Fé.

**NAMBIOOR**, a town of Hindoostan, in Mysore; 20 miles W. of Errood.

**NAMBU**, a sea-port of Japan, on the E. coast of the island of Nippon; 200 miles N. of Jedo. N. lat.  $38^{\circ} 58'$ . E. long.  $142^{\circ} 20'$ .

**NAMDO**, an island in the Baltic, near the E. coast of Sweden. N. lat.  $59^{\circ} 55'$ . E. long.  $18^{\circ} 10'$ .

**NAME** denotes a word by which men have agreed to express some idea; or which serves to denote or signify a thing or subject spoken of.

This the grammarians usually call a *noun*, *nomen*, though their noun is not of quite so much extent as our name. See **NOUN**.

Seneca, lib. ii. de Beneficiis, observes, that there is a great number of things which have no name; and which, therefore, we are forced to call by other borrowed names. "Ingens est," says he, "rerum copia sine nomine, quas cum propriis appellationibus signare non possumus, alienis accommodatis utimur;" which may shew why, in the course of this dictionary, we frequently give divers senses to the same word.

It was Adam who, probably under a divine direction, first gave things their names. Genesis, ii. 19.

Names are distinguished into *proper* and *appellative*.

*Proper* names are those which represent some individual thing or person; so as to distinguish it from all other things of the same species. As Socrates, which represents a certain philosopher.

*Appellative*, or *general* names, are those which signify common ideas; or which are common to several individuals of the same species; as horse, animal, man, oak, &c.

*Proper* names are either called *Christian*, as being given by us at baptism; or *surnames*: the first, imposed for distinction of persons, answering to the Roman *prænomen*; the second, for the distinction of families, answering to the *nomen* of the Romans, and the *patronymicum* of the Greeks.

Originally every person had but one name; as among the Jews, Adam, &c.; among the Egyptians, Busris; among the Chaldees, Ninus; the Medes, Astyages; the Greeks, Diomedes; the Romans, Romulus; the Gauls, Divitiacus; the Germans, Ariovistus; the Britons, Cassibelan; the English, Hengist, &c.; and thus of other nations, except the



the savages of mount Atlas, whom Pliny and Marcellinus represent as "anonymi," *nameless*.

The Jews gave the name at the circumcision, viz. eight days after the birth: the Romans to females the same day, and to males on the ninth; at which time they held a feast, called *nominalia*.

Since Christianity has obtained, most nations have followed the Jews, baptizing and giving the name on the eighth day after the birth, though this is far from being an uniform practice; our English ancestors generally baptized and gave the name on the birth day.

The first imposition of names was founded on different views, among different people; the most usual was to mark the good wishes of the parents, or to entitle the children to the good fortune a happy name seemed to promise. Hence Victor, Castor, Faustus, Statorius, Probus, &c.

Accordingly we find such names, by Cicero called *bona nomina*, and by Tacitus *fausta nomina*, were still first inrolled, and ranged in the Roman musters; first called to serve at the first sacrifices in the foundation of colonies, &c. And on the contrary, Livy calls Atrius Umber, *abominandi ominis nomen*: and Plautus, on occasion of a person named Lyco, *i. e.* greedy wolf, says:

"Vosmet nunc facite conjecturam, cæterum  
Quid id sit hominis, cui Lyco nomen stet."

Hence, Plato recommends it to men to be careful in giving happy names; and the Pythagoreans taught expressly that the minds, actions, and successes of men, were according to their names, genius, and fate. Thus, Panormitan, *Ex bono nomine oritur bona præsumptio*; and thus the common proverb, *Bonum nomen bonum omen*: and hence the foundation of the *Onomantia*; which see.

The abbé Barthelemi, in his "Travels of Anacharsis," (vol. v.) mentions it as a circumstance worthy of attention, that the greater part of names found in Homer comprehends marks of distinction. They were given in honour of the qualities most esteemed in the heroic ages, as valour, strength, swiftness, prudence, and other virtues. From *polemos*, signifying war, have been formed Tlepolemos, *i. e.* able to support the labours of war, and Archeptalemos, *i. e.* able to direct the labours of war. By adding to the word *mache*, or battle, certain prepositions and different parts of speech, which may modify the sense in a manner always honourable, are composed the names Amphimachus, Antimachus, Promachus, Telemachus, &c. He adds, that we find scarcely any degrading names in Homer.

Our Camden takes it for granted, that the names in all nations and languages are significative, and not simple sounds for mere distinction sake. This holds not only among the Jews, Greeks, Latins, &c. but even the Turks; among whom Abdallah signifies God's servant; Soliman, peaceable; Mahomet, glorified, &c. And the savages of Hispaniola, and throughout America, who, in their languages, name their children Glistering Light, Sun-bright, Fine Gold, &c. And they of Congo, by the names of precious stones, flowers, &c.

To suppose names given without any meaning, however by the alteration of languages their signification may be lost, that learned author thinks, is to reproach our ancestors; and that contrary to the sense of all ancient writers. Porphyry notes, that the barbarous names, as he calls them, were very emphatical, and very concise: and accordingly it was esteemed as a duty to be *ἑταίριον*, or *sui nominis homines*: as Severus, Probus, and Aurelius are called *sui nominis imperatores*.

And it was the usual way of giving names, to wish the

children might discharge their names. Thus, when Gunthram, king of France, named Clotharius at the font, he said *Crescat puer et hujus sit nominis executor*.

The ancient Britons, Camden adds, generally took their names from colours; because they painted themselves; but these names are now lost, or remain hid among the Welsh. When they were subdued by the Romans they took Roman names, some of which still remain, corrupted; though they are, for the greatest part, become extinct, upon the admission of the English Saxons, who introduced the German names, as Cridda, Penda, Oswald, Edward, &c. The Danes, too, brought with them their names; as Swayne, Harold, Knute, &c.

The Normans, at the Conquest, brought in other German names, as originally using the German tongue; such as Robert, William, Richard, Henry, Hugh, &c. after the same manner as the Greek names, Asphasius, Boethius, Symmachus, &c. were introduced into Italy, upon the division of the empire. After the Conquest, our nation, which had been averse to foreign names, as deeming them unlucky, began to take Hebrew names, as Matthew, David, Samson, &c.

The various names anciently, or at present, obtaining among us, from what language or people soever borrowed, are explained by Camden in his Remains.

Of late years it has obtained among us to give surnames for Christian names; which some dislike, on account of the confusion it may introduce. Camden relates it as an opinion, that the practice first began in the time of Edward VI. by such as would be godfathers, when they were more than half fathers. Upon which some were persuaded to change their names at confirmation; which, it seems, is usual in other countries. Thus, two sons of Henry II. of France, christened Alexander and Hercules, changed them at confirmation into Henry and Francis.

In monasteries, the religious assume new names at their admittance; to shew they are about to lead a new life, and have renounced the world, their family, and even their name: *v. g.* Sister Mary of the Incarnation, Brother Henry of the Holy Sacrament, &c.

The popes also change their name at their exaltation to the pontificate; a custom first introduced by pope Sergius, whose name, till then, as Platina informs us, was Swine-snout. But Baronius refers it to pope Sergius I. and Onuphrius to John XII. or XIII. and at the same time adds a different reason for it from that of Platina, viz. that it was done in imitation of St. Peter and St. Paul, who were first called Simon and Saul. Indeed, pope Marcellus, of late, refused to change his name.

In Italy, it is frequent to join the name of some saint, in a kind of devotion, to the Christian name; as Joannes Baptista Spinosa, &c.

Among the ancients, those deified by the heathen consecrations had new names given them, as Romulus was called Quirinus; Melicertes, Portunus or Portumnus, &c. New names were also given in adoptions, and sometimes by testament: thus L. Æmilius, adopted by Scipio, took the name of Scipio Africanus; and thus Augustus, who at first was called C. Octavius Thurinus, being adopted by the testament of Julius Cæsar into his name and family, took the name of Caius Julius Cæsar Octavianus. Names were also changed at enfranchisements into new cities. Thus Lucumo, at his first being made free of Rome, took the name Lucius Tarquinius Priscus, &c. and slaves, when made free, usually assumed their masters' names.

Those called to the equestrian order, if they had base names, were always new-named, *nomine ingenuorum veterumque*



*que Romanorum.* And among the primitive Christians, it was the practice to change the names of the catechumens: thus, the renegado Lucianus, till his baptism, was called Lucius.

Towards the close of the fifteenth century, some of the literati and wits of that period, particularly in Italy, changed their baptismal into classical names. This was done by Platina, the historian at Rome, who assumed the name of Callimachus, instead of Philip, and thus awakened the suspicion of pope Paul II. This illiterate ecclesiastic, conceiving some bad, but mysterious purpose, in this practice, wished to disclose the secret, and with this view had recourse to violent methods. Platina was cruelly tortured on this frivolous pretext; and as he had no confession to make, the pope, having ineffectually endeavoured to convict him of heresy, sedition, &c. and having kept him for a long time in prison, at length released him.

NAME, *General.* See GENERAL.

NAME, *Specific.* See SPECIFIC.

NAME, *of the,* is a phrase frequent among *Historians* and *Genealogists*, to denote persons of the same quality and name. It is near one thousand years since the emperors of the West first began to distinguish themselves in this manner by their number; and in the *Italia Sacra* of Ughellus, we meet with a charter of the emperor Louis le Debonnaire, ann. 818, wherein that prince styles himself the first of the name. Le Blanc mentions a charter of the year 1084, wherein the emperor Henry III. styles himself king of Italy, the fourth of the name; and emperor the third of the name.

Some French writers observe, that in a manuscript preserved in the king's library, their Lewis XI. is only styled the ninth of the name; Louis the Debonnaire, and Louis the Stammerer, not being then reckoned in the number, because they were emperors, as well as kings of France: on which footing, the late king, instead of the seventeenth, should only be the fifteenth of the name.

NAMETZKY, in *Geography*, a town of Moravia, in the circle of Brunn; 8 miles N.N.E. of Saar.

NAMIEST, a town of Moravia, in the circle of Olmutz; 10 miles W. of Olmutz.—Also, a town of Moravia, in the circle of Znaim; 30 miles N. of Znaim.

NAMINGATA, a town of Japan, in the island of Niphon; 56 miles N.W. of Fitaqua.

NAMIUM, NAAM, in *Law*. See NAAM.

NAMIUM *Vetitum*, or *prohibited Naam*, is an unjust taking the cattle of another, or driving them to an unlawful place, pretending damages done by them.

Such, *e. g.* is that when the bailiff of a lord distrains beasts or goods, and the lord forbids his bailiff to deliver them, when the sheriff comes to replevy them; and to that end, drives them to places unknown. Or when, without any words, they are so effoined, as that they cannot be replevied. Divers lords of hundreds, and courts-baron, have power to hold plea *de vetito namio*.

In such case, the owner of the cattle may demand satisfaction for the injury, which is called *placitum de namio vetito*.

NAMMESTA, in *Geography*, a town of Norway, in the diocese of Aggerhuus; 28 miles S.S.E. of Christiania.

NAMNAGUR, a town of Hindoostan, in Bahar; 58 miles S.S.W. of Patna.

NAMPPIO, NAMPIO, or *Nanfo*. See NAMPPIO.

NAMSEN, a river of Norway, which runs into a bay of the North sea, to which it gives name, N. lat. 64° 35'. E. long. 11° 25'.

NAMSLAW, a town of Silesia, in the principality of Breslaw, having a strong castle, situated among morasses, on

the river Weyda; 12 miles S.E. of Oels. N. lat. 51° 3'. E. long. 17° 45'.

NAMUJOS, a town of Peru, in the diocese of Truxillo; 120 miles S.E. of Chacaporas.

NAMUR, *County of*, lately one of the Catholic provinces of the Netherlands, now a part of France, constituting the department of the *Sambre and Meuse*; which see.

NAMUR, a city of France, late of the Netherlands, and capital of the county of Namur, now capital of the department of the *Sambre and Meuse*, situated in a valley at the conflux of these two rivers, the greater part being on the right side of the Sambre, between two hills. Some say that it derived its appellation from "Nam," an armed idol, supposed to be Neptune. This city was defended by a strong castle, seated on a sharp rock on the opposite side of the Sambre, which castle was rendered an almost impregnable defence by Fort William and other considerable forts. In 1692, Louis XIV., with an army of 100,000 men, laid siege to this city, that moiety of the army which covered the siege being entrusted to the command of the duke of Luxembourg. The garrison, consisting of 9000 men, was commanded by the prince of Brabant. The assailants, though apprized that king William would attempt the relief of the city, and that it was well supplied, prosecuted their attacks with such vigour, that in seven days the place capitulated, and the garrison withdrew to the citadel. The besiegers, encouraged by the presence of their monarch, and assisted by Vauban, their engineer, pursued their attack with such impetuosity, that the fort of Coehorn was surrendered after an obstinate defence, and the famous engineer Coehorn himself dangerously wounded. On this occasion, Vauban and Coehorn exhausted the whole science of attack and defence, and although the besieged performed wonders, the assailants prevailed, and the citadel surrendered in sight of king William's army, consisting of 100,000 effective men, encamped within cannon-shot of Luxembourg's army, which lay on the other side of the river. Namur remained in the possession of the French until the year 1695; when king William determined to make every possible effort for retaking it. The assault was desperate and sanguinary, and the garrison was defended with equal spirit and perseverance. On the 11th of July the trenches were opened, and on the second day of September the capitulation was completed. Such had been the French king's confidence in the strength of the place, that he caused to be placed over one of the gates this inscription: "Reddi, non vinci, potest," that is, it may be surrendered, but cannot be conquered. After the death of Charles II. of Spain, the French seized Namur, together with the rest of the Netherlands, and kept possession of it till the treaty of Utrecht, when the comté, town, and castle, were given up to the States General, to serve as a barrier against France; the sovereignty and revenues being reserved for the elector of Bavaria, and the crown contributing its quota to the maintenance of the Dutch troops and fortifications. In 1746 this fortress was taken possession of by the French, but by the peace of Aix-la-Chapelle it was ceded to the emperor; since that time the fortifications have been demolished, except the citadel, which was captured by a detachment of the French army under general Valence, in December 1792, and again surrendered in the following year. In 1794, after the defeat of general Clairfait near Louvain, on the fifteenth of July, the Netherlands were found untenable by the allies. On the 20th, the keys of the city were presented at the bar of the national convention. Namur is the see of a bishop, erected in the year 1559 by pope Paul IV. Before the reformation commenced by the late



late emperor Joseph, it had four abbeys of Benedictines, fourteen of Cistercians, one of the order of Premonstré, one abbey, and two priories of canons regular, seven chapters of canons, three chapters of noble canonesses, together with a number of religious houses both for men and women, and several hospitals. Its two divisions, N. and S., contain 16,000 inhabitants; the first 11,500, and the canton 18,537, on a territory of 102½ kilometres, in 23 communes; and the second, or S. division, containing 4500, and its canton 11,328, on a territory of 170 kilometres, in 20 communes; 25 miles S.W. of Liege. N. lat. 50° 26'. E. long. 5° 1'.

NAMUR *Marble*. See LUCULLEUM *Marmor*.

NAMUSA, in *Geography*, a small island in the Pacific ocean, belonging to the cluster called Moanges. N. lat. 5° 1'. E. long. 126° 58'.

NAMUSSO, a town of Mingrelia; 10 miles S. of Anarghia.

NANAMOW, a town of Hindoostan, in Oude; 32 miles S. of Fyzabad.

NANARSOAK, a town of West Greenland. N. lat. 61°. W. long. 47° 30'.

NANAS, a town of Hungary; 4 miles S. of Tokay.—Also, a mountain of Carniola, between Wipach and St. Veit.

NANCASERAM, a town of Hindoostan, in Canara; seven miles S. of Mangalore.

NANCAY, a town of France, in the department of the Cher; 18 miles N. of Bourges.

NANCHE, a town of the island of Formosa, on the W. coast. N. lat. 23° 52'. E. long. 119° 45'.

NANCY, a city of France, formerly the capital of Lorraine, now the capital of the department of Meurthe, near the river of that name, alternately capital with Lunéville. It is situated in a beautiful and fertile plain, and divided into Old and New Town; the first small and ill built, the latter larger and better built, the streets being wider, and in a straight line. Before the revolution, it contained three collegiate, three parish churches, seventeen convents, an university, an academy of sciences, a medical college, an hospital, and a commandery of Malta. It was formerly fortified; but by the peace of Ryfwick, the fortifications of the New Town were destroyed. The three divisions of north, east, and west, contain 29,740 inhabitants; the first, 7542, its canton 12,742, on a territory of 137½ kilometres, in 10 communes; the second, 11,189, its canton 15,422, on a territory of 70 kilometres, in 19 communes; and the third, 11,009, its canton 15,547, on a territory of 167½ kilometres, in 11 communes. N. lat. 48° 42'. E. long. 6° 16'.

NANDEDURGAM, a town of Hindoostan, in Mysore; five miles S.S.W. of Chinnabalam.

NANDELSTETT, a town of Bavaria; 9 miles N.W. of Mosburg.

NANDENORE, a town of Hindoostan, in the Carnatic; 8 miles N.N.E. of Chittoor.

NANDER, a town of Hindoostan, in Dowlatabad; 132 miles N.N.W. of Hyderabad. N. lat. 19° 6'. E. long. 77° 35'.

NANDGEERY, a town of Hindoostan, in Visiapour; 14 miles N.E. of Sattarah.

NANDGOM, a town of Hindoostan, in Baglana; 18 miles E.S.E. of Chandor.

NANDI, a town of Bengal; 25 miles S.S.E. of Moorshedabad.

NANDI *Ervatam*, in *Botany*, the name of a small shrub which grows in the East Indies, the whole of which is lac-

-scent. The juice expressed from it, mixed with oil, eases pains of the eyes, if the head is anointed with it; the root masticated, and held in the mouth, eases the tooth ache; and the same boiled in oil, makes a good ointment for all indispersions of the head, especially pain; bruised, and taken in water, it kills worms; bruised with the juice of lemon, and put into the eyes, it removes films.

NANDIGAW, in *Geography*, a town of Hindoostan, in the circle of Condapilly; 15 miles N.W. of Condapilly.

NANDINA, in *Botany*, so named by Thunberg from its vernacular appellation among the Japonese, *Nandin*. Thunb. Nov. Gen. p. 1. 14. Japon. 9. Schreb. 232. Willd. Sp. Pl. v. 1. 230. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 314. Juss. 429. Lamarck Illustr. t. 261. Gærtn. t. 92. Class and order, *Hexandria Monogynia*. Nat. Ord. uncertain.

Gen. Ch. Cal. Perianth inferior, of many leaves, imbricated in six rows, and furnished with about six, ovate, acute, smooth, caducous scales in each row. Cor. Petals six, oblong, concave, acute, longer than the calyx, falling off. Stam. Filaments six, very short; anthers oblong, erect, the length of the corolla. Pist. Germen superior, ovate, smooth; style triangular, very short; stigma triangular. Peric. Berry dry, globose, smooth. Seeds two, hemispherical, smooth.

Eff. Ch. Calyx inferior, many-leaved, imbricated. Corolla of six petals. Berry dry. Seeds two, hemispherical.

1. *N. domestica*. Garden Nandina. Linn. Syst. Veg. ed. 14. 344. Sims in Curt. Mag. t. 1109. Thunb. Japon. 147. Banks Ic. Kämpf. t. 13. 14.—(Nandsjokf, vulgo Natten vel Nandin; Kämpf. Amoen. 776.)—This ornamental plant is much cultivated both in Japan and China, and is a native of the latter, from whence it was introduced into the garden at Kew in 1804, by Mr. William Kerr.—It flowers from May to July.—Root perennial. Stems numerous, shrubby, erect, loose, branched at the top, about six feet high, and half an inch in diameter. Branches covered with the sheaths of the leaves, waved, leafy at the upper part. Leaves repeatedly compound; leaflets ternate, ovate, bristle-pointed, entire, with a reflexed margin; their stalks remarkably compounded, the divisions branching off nearly at right angles; at the lower ones more especially, the joints are swollen into a kind of globular bulbs. Flowers in loose, terminal, compound panicles, white, with prominent, bright-yellow anthers. Berries red, the size of a pea, membranous within. Seeds two, convex on one side, and concave on the other; Kämpfer compares them to what are called in the shops Crab's-eyes; they are ash-coloured or reddish.

The leaflets of this plant are remarkable for falling off at the joints of their stalks, as soon as it begins to dry between paper.

NANDOLY, in *Geography*, a town of Hindoostan, in Rohilcund; 30 miles W.S.W. of Pattiary.

NANDRAN, a town of France, in the department of the Ourte, and chief place of a canton, in the district of Huy. The place contains 566, and the canton 10,322 inhabitants, on a territory of 252½ kilometres, in 28 communes.

NANDY-ALLEM, a town of Hindoostan, in Golconda; 35 miles S.S.E. of Canoul.

NANDYOL, a town of Hindoostan, in Bengal; 10 miles S. of Goragot.

NANFIO, *Namphio*, or *Namphio*, an island in the Grecian Archipelago, situated S.W. of Stampalia, and little more than seven leagues in circuit. Its first name was Membliaros, derived from Memblarius, a Phœnician, who, when his relation Cadmus went in quest of Europa, accompanied him,



him, and settled in the neighbouring island of Thera. It has since been named Anaphe, which in Phœnician language, according to Bochart, signifies shaded and dark, an epithet which this island acquired from its gloomy and thick forests; or, as others say, from the Greek word *εἶναι*, to appear, from the thunder having on a sudden occasioned it to arise from the bottom of the waters, in order to receive the fleet of the Argonauts on its return from Colchis, when assailed by a furious tempest. This fable of antiquity is the history of the formation of Nansio, which a volcano caused to appear suddenly above the sea, in the midst of a violent agitation of the atmosphere and of the waves, which has been the case with some other islands of the Archipelago. In memory of this event was built a temple, which was consecrated to Apollo Ægletes, or dazzling with light. Mirth, wine, and pleasantries presided at the festivals which were here celebrated. Slight vestiges of the temple still appear in the S. part of the island; and the marble of which it was constructed was taken from a steep rock, of frightful aspect, on whose summit is a chapel, dedicated to "Our Lady of the Reed," or in modern Greek "Panagia Kalanitosa."

The forests which once darkened the island have disappeared, and have been succeeded only by some scattered shrubs. Its mountains are barren and naked, nor do its plains afford a much more brilliant vegetation. Agriculture languishes, and notwithstanding the fertility of the soil, barley is almost the only plant that produces any harvest. Some small plantations of vines yield good wine, and honey is common. Partridges formerly multiplied so prodigiously, that in order to preserve the corn, all the eggs that could be found were collected about the Easter holidays, and made into various sauces, and especially into amulets; and yet, according to Tournesfort, covies of partridges were still very numerous. Their number seems now to be diminished. A small town built to the S. contains the whole population of Nansio; every thing bespeaks the wretchedness spread over the territory of the island. Here is no harbour; but in front of the town, ships find a very good roadstead, protected by a small shoal, which is called "Nansio-Poulo," or Little Nansio.

NANFRI, a river of Sicily, which runs into the sea, on the S. coast, N. lat.  $37^{\circ} 3'$ . E. long.  $14^{\circ} 6'$ .

NANGA, a sea-port town of the island of Nippon, situated on a bay on the S. coast; 55 miles S.W. of Jedo. N. lat.  $35^{\circ} 52'$ . E. long.  $88^{\circ} 48'$ .

NANGABUSAN, a town of Bengal; 33 miles S.S.W. of Calcutta. N. lat.  $22^{\circ} 12'$ . E. long.  $88^{\circ} 48'$ .

NANGALLY, a town of Hindoostan, in Mysore; 13 miles N. of Vencatighery.

NANGAN, a city of China, of the second rank, in Yun-nan; 1192 miles S.W. of Peking. N. lat.  $24^{\circ} 58'$ . E. long.  $101^{\circ} 23'$ .

NANGANJEE, a river of Hindoostan, which runs into the Ambravetty; 11 miles S.W. of Carroor.

NANGASAKI, or NAGASAKI, a sea-port town of Japan, on the W. coast of the island of Ximo, at the end of a deep commodious bay. The harbour widens and deepens from its mouth towards the interior part, in which is a rocky island, where is good riding. About half a mile from the town are two imperial guards, enclosed with palisades, each of which consists of 700 men. Here are several forts, constructed along the harbour, but without cannon. The city lies at the widest end of the harbour, but it has no walls, castles, or other defence. The streets are neither straight nor wide. Three rivers run through the town, which descend from the neighbouring hills; but they scarcely afford water sufficient, during the greatest part of the year, to water

their rice-fields and gardens; though these streams, after heavy rains, swell into torrents so impetuous, as to sweep away whole houses by their rapid current. The place is divided into the inner and outer town; the former containing 26, and the latter 61 streets, in which no strangers are allowed to dwell; but they are confined under strict watch to certain suburbs. The chief public buildings are five janaguras, or large houses, near the shore, constructed of timber; in which are kept three imperial jonks, or men of war, ready to be launched at command, the powder-magazine, the palaces of the two residing governors, and other princes and grandees; some of whom reside constantly, and others occasionally there; about 62 temples within and without the city; used partly for devotion, and partly for recreation; the goknia, or common prison, consisting of about 100 large and small cages, or huts, separate from each other, where prisoners are confined, put to the torture, and privately executed, according to their rank or crimes; the brothel, consisting of two handsome streets, shut at each end by strong gates, in which prostitutes are kept, and let out for hire, either to natives or foreigners. The houses are low and mean, though well inhabited, mostly by merchants, tradesmen, and mechanics. The market is well supplied with fowls and grain of various kinds, fish, and cattle; though provisions, as well as merchandizes, sell here at a dearer rate than at other parts. The water is bad, and is said to occasion very violent and painful colics. The Portuguese were completely routed from Japan in the year 1639, and no further attempts were made on the part of the English till the year 1768, when the East India Company sent a ship to Nangasaki, with a letter from his Britannic majesty to the emperor of Japan. The emperor, probably under the influence of the Dutch, sent the English a message, forbidding any intercourse with his dominions. Thus ended all communication with Japan, on the part of the English, until the year 1803, when a ship was sent on a mercantile speculation from Calcutta, which was refused admittance, and ordered to leave in 24 hours. In 1808, captain Pellew, in the Phaeton frigate, entered the harbour of Nangasaki under Dutch colours; but the event was unpropitious. N. lat.  $32^{\circ} 45'$ . E. long.  $128^{\circ} 46' 15''$ , or  $130^{\circ} 6'$ .

NANGAXIMA, a town of Japan, in the island of Xicoco; 20 miles N.N.E. of Tofa.

NAN-GE-SU, a small island near the coast of China. N. lat.  $25^{\circ} 6'$ . E. long.  $119^{\circ} 24'$ .

NANGIHAN POINT, the southern extremity of the island of Leyta. N. lat.  $10^{\circ} 2'$ . E. long.  $124^{\circ} 57'$ .

NANGIS, GUILLAUME DE, in *Biography*, an ancient French historian, who flourished in the fourteenth century, was a Benedictine monk of the abbey of St. Denis. He wrote the lives of St. Lewis, and of Philip le Hardi, and also two chronicles; the first from the creation to the year 1300, the second a chronicle generally of the kings of France. The lives were printed, for the first time, in Pithou's collection in 1596, and the chronicle from the year 1113 was published in the "Spicilegium" of D. Luc d'Archery. Moreri.

NANGIS, in *Geography*, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Provins; 12 miles W. of Provins. The place contains 1999, and the canton 8922 inhabitants, on a territory of  $322\frac{1}{2}$  kilometres, in 19 communes.

NANG-KANG, a city of China, of the first rank, in the province of Kiang-si, on the lake Po-yang. It has four cities of the third class under its jurisdiction; 637 miles S. of Peking. N. lat.  $29^{\circ} 33'$ . E. long.  $115^{\circ} 39'$ .

NAN-



**NANGOIA**, a town of Japan, in the island of Ximo; 65 miles N. of Nangafaki.

**NANGU**, a town of Hindoostan, in Myfore; 25 miles N. of Rettinghery.

**NANGUER**, in *Zoology*, the *Antelope Dama*, has its horns hooked forwards at the ends; the upper parts of the body tawny yellow, the under parts white, with a white spot on the chest. This is the *dama* of Pliny, Gesner, Ray, &c. the swift antelope of Pennant, and in his opinion, the *Knyuz*, or *Cemas*, of Ælian. It inhabits Senegal. This animal is three feet ten inches in length, from the nose to the origin of the tail, and two feet eight inches high at the shoulder; the greater part of the body is white, but the back, upper parts of the sides, and the head, are tawny or yellowish; there are, however, varieties as to colour. Both sexes have round horns, about eight inches long, bent or hooked forwards, and sharp-pointed; there are only six fore-teeth in the lower jaw. The Nanguer is very swift and is easily tamed. Ælian compares the flight of the *Knyuz* to the rapidity of a whirlwind.

**NAN-HOANG-TCHIN-TAO**, in *Geography*, a small island near the coast of China, in the Eastern sea. N. lat. 38° 18'. E. long. 120° 44'.

**NANI**, **GIAMBATISTA**, in *Biography*, an Italian historian, of a noble Venetian family, was born in 1616, and educated under the eye of his father, who took him to Rome in his suite, being appointed ambassador from the Venetian republic to pope Urban VIII. In 1641, Nani was admitted into the college of senators, and soon after was appointed ambassador to France, where he resided five years. He was much esteemed by cardinal Mazarin, who was in the habit of consulting him on public affairs. In 1648 he returned to Venice, having obtained from the court of France a considerable aid of men and money for the defence of Candia against the Turks. The superintendence of the affairs of war and finances was then entrusted to him; and in 1664 he was sent ambassador to the Imperial court, which he visited a second time on the accession of the emperor Leopold. In 1670 he was delegated upon a second embassy to the court of France, and on his return was nominated a procurator of St. Mark; and was soon after raised to the post of captain-general by sea. The maritime service not agreeing with him, he continued to serve the state at home, and the office of historiographer was conferred upon him, and the manner in which he performed its duties rendered his name illustrious. He died in 1678. He was author of the "History of Venice from 1613 to 1671," of which the first part was published at Venice in 1662, and the second after his death in 1679. It is much esteemed for the veracity of the narrative, and for the depth and sagacity of the political reflections. To the new edition in the collection of Venetian historians, the life of the author is prefixed. It has been translated into the French and English languages. Moreri.

**NANI**, in *Geography*, a town of Candahar; eight miles S.W. of Ghizni.

**NANIJAR**, a town of Africa, in the kingdom of Burfali.

**NANIMAN**, a town of the island of Cuba; 75 miles W.S.W. of Havannah.

**NANINA**, a town of Abyssinia; 70 miles E. of Miné.

**NANINO**, **GIOVANNI MARIA DA VALERANO**, in *Biography*, was admitted into the pontifical chapel, as a tenor singer, in 1577. He was a fellow student and in strict friendship with Palestrina. These two excellent masters opened a music-school together at Rome, where they formed many great scholars, among whom was Giov. Bernardino

Nanino, a younger brother of Maria, according to Walther, but called by P. Martini his nephew, and Antonio Cifra. Antimo Liberati informs us of a circumstance, which will be readily believed; that Palestrina had no relish for the drudgery of attending a school, having his thoughts so much absorbed in his own studies; and that, leaving the care of the disciples to Nanino, his visits were not very frequent or long, calling only from time to time in order to explain to them such uncommon difficulties and doubts as impeded the progress of their studies, and to adjust the disputes which arose among the professors, who in great numbers constantly attended the lectures there. Though Nanino was regarded by the Romans as one of the most learned musicians of his time, yet Sebastian Raval, a Spaniard, then at Rome, thinking they were all mistaken, and that he was himself very much his superior, challenged him and his countryman Seriano, another friend of Palestrina, to a musical combat, which was to be determined by a weapon they had both frequently wielded, the pen: in this engagement, however, the Spaniard was defeated. Many different sets of madrigals, by Nanino, were published at Venice during the latter end of the sixteenth century, which are now difficult to find; there are, however, in the "Studi di Palestrina, several of his chants, which are excellent. P. Martini, "Storia della Musica," has given in his catalogue of authors the titles of two very curious works: the first of these, by G. M. Nanino, is called "Centocinquante sette Contrappunti e Canoni, a 2, 3, 4, 5, 6, 7, 8, 11 Voc. Sopra de Cantofermo intitolato la Bale di Coltanzo Festa;" the second is styled "Trattato di Contrap. con la regola per far Contrappunto a mente, di G. M. Nanino e Bernardino Nanino, suo Nipote."

**NANINO**, **BERNARDINO**, the younger brother of Maria, according to Antimo Liberati, was a person of very extraordinary abilities, who, by an inventive style joined to a perfect knowledge of harmony, had greatly improved the art of composition. The only productions which we have seen of this master, are two or three chants in the "Studi di Palestrina."

**NANKA ISLANDS**, in *Geography*, three small islands in the East Indian sea, the southernmost of which lies close to the western shore of the island of Banca. Sir Erasmus Gower observed, that it was very desirable for ships to stop at the Nanka isles, as wood for fuel is very conveniently procured from thence; and the water thought preferable, for keeping to any before discovered by the squadron in those seas. It discharges itself from three small hills into a deep reservoir. The tide rises and falls about 11 feet, and flows once only in the 24 hours. The latitude of the road is 2° 22' S., and the longitude 105° 41' E. This place is perfectly sheltered from S.W. by S. to the N.W.; and there can be no high sea with any wind, as the land is but at a short distance in the open points. The sea was very shallow close to these petty islands, and heaps of stone mixed with iron ore were, in many places, seen just rising above the surface, without the least covering of vegetation, and as if, at no very remote period, vomited up by the force of subaqueous fire. Staunton's Embassy to China, vol. i. p. 307.

**NAN-KING**, or **KIANG-NING**, a city of China, the capital of the province of Kiang-nan, is said to have been formerly one of the most beautiful and flourishing cities in the world. The Chinese, in speaking of its extent, say, that if two horsemen should go out by the same gate, and ride round it in full speed, taking different directions, they would not meet before night. Although this account is exaggerated, it is certain, says Grofier, that Nan-king surpasses in extent all the other cities of China. Its walls, it is said,



are  $5\frac{1}{2}$  leagues in circumference. A French missionary gives the following account of its extent. The suburbs, he says, are very long, but not populous; the houses stand at some distance from one another, having reeds, pools of water, or plantations of bamboo between them. Viewing it from the 5th story of the porcelain tower, which commands an extensive prospect, it did not appear to be above two-thirds as large as Paris. In order to reconcile this appearance with the accounts that have been given of its immense extent, they found, upon travelling a full league from Nan-king, the walls of a city rising amidst mountains, and appearing as if cemented to the rocks. These were the walls of Nan-king, which, leaving the city where it now stands, have, as it were, retired thither, to enclose a space of fifteen or sixteen leagues, twelve or thirteen of which are not inhabited.

This city is situated at the distance of a league from the river Yang-tse-kiang; it is of an irregular figure; the mountains within its circuit having prevented its being built on a regular plan. It was formerly the imperial city, and for this reason called Nan-king, *i. e.* the southern court; but since the six grand tribunals have been transferred from thence to Pe-king, it is called Kiang-ning in all the public acts. It has lost much of its ancient splendour; no vestige now remains of its magnificent palace; other monuments of its grandeur have also disappeared. A third of the city is deserted, but the rest is all inhabited. Some quarters of it are populous, and full of business. The streets are less broad than those of Pe-king; but they are very beautiful, well paved, and bordered with rich shops. One of the great mandarins, called T'fong-gtou, resides here, to take cognizance of all important concerns: the Tartars have a numerous garrison here, commanded by a general of their own nation, and they occupy a quarter of the city, separated from the rest by a plain mall. The palaces of the mandarins are not particularly distinguished from those of the capitals of other provinces; and here are no public edifices corresponding to the reputation of a city so celebrated, excepting its gates, which are very beautiful, and some temples, among which is the famous porcelain tower, 200 feet high, and divided into nine stories, to the first of which is an ascent of forty steps, and to each of the others twenty-one. The port was formerly rendered commodious by the breadth and depth of the river Yang-tse-kiang; but at present large barks, or Chinese junks, never enter it. In April and May excellent fish are caught in this river near the city, which are sent to court, covered with ice, and transported by barks kept for this purpose. This city is more than 200 leagues from Pe-king, and the boats arrive there in eight or nine days. This city, though the capital of the province, has only eight cities of the third class under its jurisdiction. N. lat.  $32^{\circ} 4'$ . E. long.  $118^{\circ} 24'$ .

NAN-NGAO-T'CHING, an island near the coast of China, about 22 miles in circumference. N. lat.  $23^{\circ} 30'$ . E. long.  $116^{\circ} 40'$ .

NAN-NGHAN, a city of China of the first rank, situated in the most southern part of the province of Kiang-si: it is a beautiful, populous, and commercial city, and much frequented. It has dependent upon it four cities of the third class.

NANNI, GIOVANNI, in *Biography*. See UDINÉ GIOVANNI DE.

NANNI, or NANNIUS, PETER, a critic and philologist, was born at Alcaer, in Holland, in the year 1500. He received an excellent education, and afterwards taught philosophy in his own country. He was chosen professor of the learned languages at Louvain, and in this situation passed

eighteen years. He then obtained the canonry at Arras, which he kept till his death, in 1557. His principal works were "Miscellaneorum Decas," containing annotations upon a number of ancient authors in ten books; "Dialogismi Heroinarum," reckoned his best work; "Annotationes in Institutiones Juris Civilis;" "Scholia in Cantica Cantorum," and translations of several works, chiefly from Greek authors. He is regarded as a "good critic, an inestimable poet, but an indifferent orator." Moreri.

NANNI, in *Geography*, a town of Persia, in the province of Irak; 110 miles E. of Ispahan.

NAN-NING, a city of China, of the first rank, in the province of Quang-li; 1145 miles S.S.W. of Pe-king. N. lat.  $22^{\circ} 44'$ . E. long.  $107^{\circ} 44'$ .

NANNO, in *Biography*, a girl celebrated for her beauty, for her talents in playing upon the flute, and for the poem which Mimnermus made on the love with which she had inspired him, though he was arrived at an age when we are usually exempted from such passions.

"What is life and all its pride,  
If love and pleasure be denied?  
Snatch, snatch me hence, ye Fates, whene'er  
The am'rous blifs I cease to share.  
O let us crop each fragrant flow'r,  
While youth and vigour give us pow'r;  
For frozen age will soon destroy  
The force to give or take a joy;  
And then, a prey to pain and care,  
Detested by the young and fair,  
The sun's blest beams will hateful grow,  
And only shine on scenes of woe!"

NANNUCKLOO, in *Geography*, a small island near the E. coast of Labrador. N. lat.  $56^{\circ} 20'$ . W. long.  $60^{\circ}$ .

NANNY TOWN, *Old*, a deserted town of the island of Jamaica; 16 miles E.N.E. of the town of Kingston.

NANORE, a town of Bengal; 28 miles N. of Burdwan.

NANSA, a town of Spain, in Asturia; 18 miles S.W. of Santillana.

NAN-SA-CHE, a town of China, near the W. coast of the island of Formosa. N. lat.  $25^{\circ} 2'$ . E. long.  $120^{\circ} 39'$ .

NAN-SAN, a small island near the coast of China. N. lat.  $26^{\circ} 50'$ . E. long.  $119^{\circ} 20'$ .

NANSEMOND, a county of Virginia, on the S. side of James' river, and W. of Norfolk county, on the North Carolina line, about 44 miles long, and 24 broad, containing 11,127 inhabitants, including 4408 slaves.—Also, a short river of Virginia, flowing from Great Dismal Swamp; first in a N., then in a N.E. direction, and discharging itself into James' river, a few miles W. of Elizabeth river.

NAN-SHOO-FOU, the frontier city of the province of Quang-tong, according to sir G. Staunton's Embassy to China. The Chinese Atlas places here a city, called Nan-yong, which is understood to be the same place. See NANYONG.

NANT, a town of France, in the department of the Aveyron, and chief place of a canton, in the district of Milhau; 10 miles S.E. of Milhau. The place contains 2171, and the canton 8289 inhabitants, on a territory of 310 kilometres, in 9 communes.

NAN-TA-KI, a town of China, on the W. coast of the island of Formosa. N. lat.  $24^{\circ} 50'$ . E. long.  $120^{\circ} 20'$ .

NANTASKET ROAD, the entrance into the channels of Botton harbour, in which a vessel may anchor safely in from seven to five fathoms. Two huts are erected here with accommodations for shipwrecked seamen.

NAN-TCHANG, a city of China, of the first rank, and capital



capital of the province of Kiang-si. This city has no trade but that of porcelain, which is manufactured in the neighbourhood of Jao-tcheou. It is the residence of a viceroy, and comprehends in its district eight cities, seven of the first class and one of the second. The adjoining country is so much cultivated, that the pastures which remain are scarcely sufficient for the flocks; 695 miles S. of Pe-king. N. lat.  $28^{\circ} 36'$ . E. long.  $115^{\circ} 30'$ . See KING-TI-CHING.

NANTERRE, a town of France, in the department of the Seine, and chief place of a canton, in the district of St. Denis; 5 miles W. of Paris. The place contains 2300, and the canton 11,000 inhabitants, on a territory of 54 kilometres, in 7 communes.

NANTES, a city of France, and capital of the department of the Lower Loire, formerly capital of a district, called Nantois in Bretagne. It is situated on the Loire, and has been reckoned one of the greatest trading cities in the kingdom: it is large and populous, consisting of six parts, and comprehending 73,649 inhabitants: its cantons are six, including 81,638 inhabitants, on a territory of  $107\frac{1}{2}$  kilometres, in 5 communes. Before the revolution, it was the see of a bishop, the seat of an intendency, a chamber of accounts, or board of finances, a mint-office, &c. &c. In it were, exclusively of the cathedral, and a collegiate church, eleven parish churches, fourteen convents, two hospitals, one college, and an university founded about the year 1460, a society of agriculture and arts, a school of anatomy and surgery, and a large rope manufacture. Nantes has been accustomed to carry on a very large trade to the French colonies, to America, to Spain, Portugal, and other parts; though ships of burthen can come no further up the Loire than to Paimbœuf, a market-town, where the cargoes are transferred to smaller vessels, and conveyed to Nantes. The temperature of Nantes appears, from four years observations, to be  $55^{\circ} 53'$ , and therefore differs very little from the standard, which is  $55^{\circ} 5'$ . N. lat.  $47^{\circ} 13'$ . E. long.  $1^{\circ} 26'$ .

NANTES, *Edict of*, in *Ecclesiastical History*, a famous edict promulgated at Nantes in the year 1598, by which Henry IV. granted to the professors of the reformed or Protestant religion, the liberty of serving God according to their consciences, and a full security for the enjoyment of their civil rights and privileges, without persecution or molestation from any quarter. This edict restored and confirmed, in the fullest terms, all the favours that had ever been granted to the Protestants by other princes, and particularly by Henry III. To these privileges others also were added, which had never been granted, nor even demanded before; such as free admission to all employments of trust, honour, and profit, the establishment of courts and chambers, in which the professors of the two religions were equal in number; and the permitting the children of Protestants to be educated, without any molestation or constraint, in the public universities. This edict was revoked by Lewis XIV., at the instigation of the bishops and Jesuits, in the year 1685, a measure which, though accompanied with the applause of Rome, excited the indignation even of many Roman Catholics, whose bigotry had not effaced or suspended, on this occasion, their natural sentiments of generosity and justice. This revocation was followed by another measure, still more tyrannical and shocking, even an express order, addressed to all the reformed churches, to embrace the Romish faith. The consequences of this cruel and unrighteous proceeding were highly detrimental to the true interests and the real prosperity of the French nation, by the prodigious emigrations it occasioned among the Protestants, who sought, in various parts of Europe, that

religious liberty, and that humane treatment, which their mother-country had so cruelly refused them. Those among them whom the vigilance of their enemies guarded so closely as to prevent their flight, were exposed to the brutal rage of an unrelenting soldiery, and were assailed by every barbarous form of persecution that might tend to subdue their courage, exhaust their patience, and thus engage them to a feigned and external profession of Popery, which in their consciences they beheld with the utmost aversion and disgust. From this evil, however, good has ultimately proceeded. The event was very beneficial to almost all the Protestant countries of Europe; and more especially to the commerce of Holland, Brandenburg, and England. The number of refugees, who on this occasion fled from France, and carried their skill and industry in various manufactures to other countries, was, at a moderate computation, more than half a million.

The revocation of the edict of Nantes was followed by a persecution of the Huguenots, called, from the dragoon troops employed in it, the "Dragonade." It is but justice to acknowledge, that this horrid persecution was condemned by the greatest and best men in France. M. d'Auzouffleau, the father of the celebrated chancellor, resigned his office of intendant of Languedoc, rather than be a witness of it: his son repeatedly mentions it with abhorrence. Fenelon, Flechier, and Bossuet, confessedly the ornaments of the Gallican church, lamented it. To the utmost of their power they prevented the execution of the edict, and softened its severities, where they could not prevent them. This practical condemnation of the resort to temporal power, in effecting religious conversion, does all these illustrious characters the greatest honour, as the doctrine of religious toleration was, at that time, little understood. We are constrained, however, to allow that Bossuet, the bishop of Meaux, seems to admit, in theory, the general right of Christian princes to enforce acts of religious conformity, by wholesome severities; and thus allows them, for effecting a spiritual good, a resort to temporal means, which the divine founder of our faith so explicitly disclaimed for himself.

NANTES, or *Swimming*, in the Linnæan system of Zoology, is the name of an order of animals under the class of amphibia; the characters of which are, that they are pinnated, and breathe by lateral branchiæ or gills. This order comprehends fourteen genera, and seventy-six species. To this order belong the petromyzon, raja, squalus, &c.

NANTEUIL, in *Geography*, a town of France, in the department of the Aisne, between Meaux and Chateau-Thierry.—Also, a town of France, in the department of the Marne; 6 miles N. of Epernay.

NANTEUIL-le-Haudouin, a town of France, in the department of the Oise, and chief place of a canton, in the district of Senlis; 9 miles E.S.E. of Senlis. The place contains 1420, and the canton 8980 inhabitants, on a territory of 170 kilometres, in 22 communes.

NANTIAL, a town of France, in the department of the Upper Vienne, and chief place of a canton, in the district of Bellac. The place contains 1570, and the canton 12,385 inhabitants, on a territory of 290 kilometres, in 12 communes.

NANTICOKE, a town of America, in Sussex county, Delaware, containing 1832 inhabitants.

NANTICOKE *Creek*, a river of Upper Canada, now called Wavenny, which discharges itself into lake Erie, between Long Point and Grand river.

NANTICOKE, a navigable river of the eastern shore of Maryland, which runs into Chesapeake bay.



**NANTICOKES**, tribes of Indians, who formerly lived in Maryland, upon the above-mentioned river. They first retired to the Susquehanna, and then further north. By the shocking act of poisoning, in which they excelled, they almost extirpated the whole nation, and destroyed some of their neighbours. These, with the Mohickons and Conoys, about forty years ago inhabited Utsonango, Chagnet, and Owegy, on the E. branch of the Susquehanna. At that period the two said tribes could furnish 100 warriors each; and the Conoys 30.

**NANTIGNI**, **LOUIS CHAZOT DE**, in *Biography*, celebrated for his genealogical writings, was born in 1692 in Burgundy. He studied at Dijon and Paris, and at the latter city he was entrusted with the education of some young men of rank. Having a turn for historical researches, he employed all his leisure in drawing up genealogical tables, and from 1736 to 1738 he published the fruits of his labours in a work entitled "Genealogies Historiques des Rois, des Empereurs, et de toutes les Maisons Souveraines," in four vols. 4to. He also published "Tablettes Geographiques;" "Tablettes Historiques, Genealogiques, et Chronologiques;" and "Tablettes de Themis." He supplied many articles for the supplement of Moreri, and supplied the genealogical part of the "Mercure." He died in 1755, but had the misfortune totally to lose his sight some time before his death.

**NANTILDA**. Fauchet relates that Dagobert, being at vespers in the abbey of Remilly, heard a nun sing so exquisitely, that he entered into the convent to see her; and being equally charmed with her beauty as with her voice, he married her; and she merited, by her conduct and piety, a place among the saints.

**NANTING-SU**, in *Geography*, a small island near the coast of China. N. lat. 24° 10'. E. long. 118° 6'.

**NANTRILL**, E. and W., two townships of America, in Chester county, Pennsylvania.

**NANTUA**, a town of France, and principal place of a district, in the department of the Ain; 36 miles W. of Geneva. The place contains 2791, and the canton 8259 inhabitants, on a territory of 137½ kilometres, in 10 communes. In the time of the Romans this town was called Nantuacum, and appears, by medals and fragments of inscriptions which have been found here, to have been a place of consequence before the revolution. It had two convents, one for men and another for women. It has manufactures of gauzes, taffetas, stockings, nankeens, and printed calicoes or chintzes. The adjoining lake, called by its name, and about four or five miles in circumference, abounds with fish. Its length is considerable, and on the S.E. side the mountains are abruptly and highly elevated; and towards the southern extremity of Nantua, there are quarries of different sorts of gypsum. N. lat. 46° 9'. E. long. 5° 41'.

**NANTUCKET**, an island of North America, belonging to the state of Massachusetts, and situated between 41° 13', and 41° 22' 30" N. lat., and between 69° 56', and 70° 13' 30" W. long., about eight leagues S. of Cape Cod, and E. of the island of Martha's vineyard. It is 15 miles long, and 11 broad, including Sandy point, but its general breadth is 3½ miles. It has only one bay of note, formed by a sandy point, extending from the E. end of the island to the N. and W., on which was erected a light-house in 1784, and on the N. side of the island as far as Eel point. This is a fine road for ships, except when the wind is at N.W., which causes a heavy swell. The island constitutes a county of its own name, and contains 5617 inhabitants, and sends one representative to the General Court. It has ten spermaceti works. The inhabitants are, in general, robust and enterprising, most of them being seamen and mechanics.

The seamen are singularly expert whalers. The whale fishery originated among the white inhabitants in 1690: and advanced to a considerable state of prosperity, which was almost ruined by the late war; but it has since revived and extended to the great Pacific ocean. The island had formerly plenty of wood. The people who inhabit it, and particularly the females, are much attached to it, and have no wish to emigrate. They are mostly Friends, or Quakers; but there is one society of Congregationalists. There are at present about 300 proprietors of the island; among whom the proportional number of cattle, sheep, &c. are put out to pasture, and the quantity of ground appropriated to the raising of crops is subject to particular regulations; and proper officers are appointed who keep books for debiting and crediting the different proprietors.

**NANTUCKET**, formerly "Sherburne," a post-town, capital, and port of entry in the above-mentioned island; 123 miles S.W. of Boston.

**NANTUCKET Shoal**, a bank which stretches out above 15 leagues in length, and six in breadth to the S.E. of the island of its name.

**NANTUXET BAY**, a bay of New Jersey, on the E. side of Delaware bay, opposite to Bombay Hook.

**NANTWICH**, or **NAMPTWICH**, a market-town in the hundred of Nantwich, and county palatine of Chester, England, is seated in a luxuriant vale, on the high road from London to Chester, at the distance of 170 miles from the former place, and 20 from the latter. The earliest mention of this town is in the reign of William the Conqueror, when a sanguinary battle between the English and Welsh is said to have been fought in its vicinity. In 1113 it was laid waste by the Welsh, and in 1146 we find a band of these mountaineers defeated here when returning homewards from a predatory excursion. From this time history is silent concerning it, till the era of the civil wars between the king and the parliament in the seventeenth century, when it appears to have been fortified with mud-walls and ditches; and to have been several times taken and retaken by each of the contending parties. Lord Byron besieged it for the king in 1644, but before he was enabled to reduce the garrison, his army was attacked and defeated by the parliamentary forces under sir William Fairfax. Fire and pestilence have also produced very destructive effects in this town: for in 1438, almost every house was consumed by the former; and in 1604, the latter produced a mortality of upwards of 500 persons.

Extensive salt-works were formerly established here: but these are nearly relinquished. Many of the lower class of inhabitants now derive a livelihood from shoe-making for the London shops; and a small cotton manufactory has been lately established. The church of Nantwich is built in the form of a cross, having large pointed windows in the east and west ends, adorned with very elegant tracery. The market-house is a neat modern edifice, occupying the site of an ancient fabric, which suddenly fell to the ground in the year 1739. There are various alms-houses, a workhouse, erected in 1780, and a free-school. It is said there were likewise formerly several hospitals, now gone to ruin, and their funds applied to other purposes. The petty sessions for the hundred are held in this town; and the inhabitants possess an exemption from serving on juries except within its limits. Saturday is the market-day, and there are three fairs during the year. Nantwich, according to the parliamentary returns of 1811, contained 873 houses, and 3999 inhabitants.

Adjoining to the town are seen the foundations of the castle, which was a ruin so early as the reign of Henry VII., when it was demolished, and the stones made use of for the purpose



purpose of enlarging the parish church. The site is now the property of earl Cholmondeley, whose chief residence is situated about five or six miles further to the eastward. (See MALPAS.) Crewe-hall, the seat of lord Crewe, lies to the west of Nantwich; and is a very fine specimen of the architecture of the 17th century. This mansion was garrisoned for the parliament at the commencement of the civil wars, but was taken, after an obstinate resistance, by the royal army under lord Byron, in 1643. A view of a curious staircase in this house, with a history and description of the building, are published in Britton's "Architectural Antiquities of Great Britain," vol. ii. Doddington castle, which stands four miles to the south of the town, is also remarkable for having been several times besieged and taken during the same unfortunate era. Lysons' "Magna Britannica," vol. ii. 4to. 1810. Beauties of England and Wales, vol. ii.

NANUI, a town of Persia, in the province of Irak; 54 miles N.E. of Isfahan.

NAN-YANG, a city of China, of the first rank, in the province of Ho-nan. It is situated on the banks of a small river; and though neither large, rich, nor populous, its jurisdiction comprehends two towns of the second class, and six of the third class, and abounds with provisions, so that numerous armies have remained in it without occasioning any perceptible scarcity. Lapis lazuli has been found in some of the mountains that surround it; 462 miles S.S.W. of Peking. N. lat.  $33^{\circ} 6'$ . E. long.  $112^{\circ} 14'$ .

NAN-YONG, or NAN-KIONG, a city of China, of the first rank, in the province of Quang-tong, situated in a fertile country at the foot of a mountain, which separates the province of Quang-tong from that of Kiang-si, and carrying on an extensive trade. Its jurisdiction comprehends two towns of the third class; 902 miles S. of Peking. N. lat.  $25^{\circ} 10'$ . E. long.  $113^{\circ} 32'$ .

NANZOO, a town of the Birman empire; 16 miles W. of Ava.

NAOUAI, or NAOUAOU, the surname of Al-Schafei, in *Biography*, a musfulman doctor, who wrote many works by which he acquired great celebrity, was born at Naoua, a small town within the jurisdiction of the city of Damascus, at which place he went to live at the age of thirteen, or, as others say, nineteen; this is the more probable, as it was at this early period of life he was created doctor of law. The musfulmen call him Imam abel Zamanehi, or the great Imam of his age, and they speak of him as a doctor intimately conversant in the knowledge of religion, who lived retired from the world, in the practice of all the duties of piety; who was thoroughly instructed in traditions, and a great master of jurisprudence. He died at Damascus in the year of the Hegira 676, or 1298 of the Christian era. He was buried at his native place, where he received the honours of sainthood. He was author of "Treatises on Jurisprudence;" "A Treatise on Musfulman Traditions;" a work "On the Fundamental Principles of the Mahometan Religion;" and other pieces. He is sometimes referred to as "the doctor in traditions of the city of Damascus." Gen. Biog.

NAOUR, in *Geography*, a town of Nubia, on the Nile; 15 miles N.E. of Molcho.

NAP of *Grayland*, a cape on the W. coast of the island of Yell. N. lat.  $65^{\circ} 56'$ . W. long.  $1^{\circ} 31'$ .

NAPABEICHIC, a town of Mexico, in the province of New Biscay; 160 miles N.W. of Parral.

NAPACAR, a town of the island of Calpenteen, in the Indian sea. N. lat.  $7^{\circ} 56'$ . E. long.  $79^{\circ} 48'$ .

NAPÆA, in *Botany*, so named either by Linnæus or Clayton, from *Napæa*, the goddesses or nymphs of the

groves, mentioned in Virgil's *Georgics*, "faciles venerare Napæas."—Linn. Gen. 352. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 1. v. 3. 417. Juss. 273. Lamarck Illustr. t. 579. Gærtn. t. 136. (Sida; Schreb. 463. Cavan. Diff. 1.)—Class and order, *Monadelphia Polyandria*. Nat. Ord. *Columnifera*, Linn. *Malvacea*, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, five-cleft, round, urn-shaped, permanent. Cor. Petals five, oblong, concave, spreading, connected by oblong claws. Stam. Filaments numerous, capillary, the length of the corolla, united below into a cylindrical column; anthers roundish, compressed. Pist. Germen superior, conical; style cylindrical, ten-cleft at the top, as long as the corolla; stigmas simple. Peric. Capsule ovate, composed of a number of sharpish, pointless cells, not bursting, finally deciduous. Seeds solitary, kidney-shaped.

Obs. Linnæus, in his *Mantissa*, and Murray, in the fourteenth edition of the *Systema Vegetabilium*, removed this genus to the class *Dioecia*, both the species proving to be dioecious by occasional or perhaps constant imperfection of the respective organs of impregnation. Cavanilles thought that this was the only point in which *Napæa* differed from *Sida*, but there appears to be a further difference in their fruit. Jussieu observes also that the petals of the genus before us are not oblique, neither is the flower-stalk jointed, whilst the calyx is broader at the base.

Ess. Ch. Calyx inferior, five-cleft. Petals five. Capsules roundish, depressed, of many cells, not bursting. Seeds solitary.

1. *N. laevis*. Smooth *Napæa*. Linn. Syft. Veg. ed. 14. 896. (N. hermaphrodita; Linn. Sp. Pl. 965. *Sida Napæa*; Willd. Sp. Pl. v. 3. 766. *Malva virginiana*, Ricini folio; Herm. Lugd. 22. t. 23.)—Stalks naked, smooth. Leaves lobed, smooth. Native of North America, flowering from July to September, and ripening its seeds in autumn, when the stalks decay.—Root perennial, creeping. Stems three or four feet high, smooth. Leaves alternate, on longish, slender footstalks, acutely three-lobed, serrated, about four inches long at the bottom part of the stem, but gradually diminishing upwards. Stalks three inches in length, divided at the top into about three smaller ones, each bearing a single white flower.

2. *N. scabra*. Rough *Napæa*. Linn. Syft. Veg. ed. 14. 896. (N. dioica; Linn. Sp. Pl. 965. Amoen. Acad. v. 3. 18. *Sida dioica*; Willd. Sp. Pl. v. 3. 766.)—Stalks bracteated, angular, leaves palmate, rough.—Native of North America like the last, flowering and fruiting at the same time with that.—Root perennial, composed of numerous, thick, fleshy fibres, connected at the top into a large head, from which proceed many rough, hairy leaves, nearly a foot in diameter, deeply cut into six or seven lobes, irregularly toothed. Stems seven or eight feet high, divided in the upper part. Stalks bearing several large, white flowers, in heads. Fruit orbicular, depressed, consisting of eight or ten cells.

NAPÆA, in *Gardening*, contains plants of the hardy, herbaceous, showery perennial kind, of which the species mostly cultivated are; the smooth *napæa* (*N. laevis*); and the rough *napæa* (*N. scabra*).

*Method of Culture*.—These different plants are easily increased by seeds, which should be sown on a bed of common earth in the spring, keeping them clear from weeds till autumn, and then transplanting them where they are to remain. They succeed best in a rich moist soil, in which they will grow very luxuriantly, and must be allowed room. And the first sort may also be increased by parting the roots, and planting them out where they are to remain in the autumnal season.



These plants afford variety among other plants in the borders and other places.

NAPÆÆ, in *Mythology*, nymphs who presided over the groves. See NYMPHS.

NAPASHISH, in *Geography*, a lake of North America. N. lat. 62° 10'. W. long. 99° 50'.

NAPATA, a town of Nubia, near the E. coast of the Nile; 210 miles E.S.E. of Dongala.

NAPPAUL. See NEPAUL.

NAPAYOL, or NAPAYEDLA, a town of Moravia, in the circle of Hradisch; 8 miles N. of Hradisch.

NAPÆ is used for the hinder part of the neck; by reason, perhaps, of the soft short hair growing thereon, like the knap of cloth.

NAPÆ, in *Rural Economy*, a provincial term applied to a piece of wood used for supporting the fore-part of a loaded wain.

NAPELLUS, in *Botany*. See ACONITUM.

NAPHA, a name given by many of the writers in pharmacy to orange-flower water.

NAPHTHA, in *Chemistry*, is an inflammable liquid of a yellow colour, being the most volatile and colourless part of petroleum, from which it is distilled. Hence naphtha appears to have the same relation to petroleum, which turpentine and tar have to the oil of turpentine, and what is called spirit of tar.

The word in the original Chaldee signifies *stillare*, to ooze, or *drop*; naphtha, according to Pliny, running like a kind of bitumen.

There seems to be a strong alliance between the volatile acids and naphtha, extending to all the volatile fluids distilled from the different species of bitumen. This, in all probability, is the natural state of this description of inflammable bodies; the viscosity, solidity, and colour depending upon the agency of oxygen.

It is the general opinion that the oxygen becomes a component part of the volatile oil, in order to assume the form of resin. It is, however, much more probable, that the oxygen consumes the hydrogen, forming water, leaving the remainder a compound of hydrogen and carbon, with more of the latter element, to which it owes its colour, consistence, and fixity.

Petroleum may, therefore, be regarded as naphtha rendered viscid, and coloured by the air, from which the naphtha, still unchanged, being distilled, leaves a substance which contains a less proportion of hydrogen, and which is known by the name of asphaltum. See PETROLEUM and ASPHALTUM.

Naphtha has been employed by sir H. Davy for the purpose of preserving the metals potassium and sodium, for which it seems particularly adapted, from two of its properties, namely, its small specific gravity, and its not containing oxygen. Although the specific gravity of potassium is but .77, it sinks in pure naphtha, which is sometimes not more than .7.

NAPIER, in *Biography*. See NEPER.

NAPIER'S, or Neper's Bones. See NEPER'S BONES.

NAPIMOGA, in *Botany*, a genus of Aublet's, so called from the Caribean name of the tree, *Napimogal*. Aubl. Guian. v. 1. 592. Juss. 344. Lamarck Ilustr. t. 484.—Class and order, *Polyandria Trigynia*. Nat. Ord. *Rosacea*, Juss.

Gen. Ch. *Cal.* Perianth superior, of one leaf, small, concave, in six roundish, acute, permanent segments. *Cor.* Petals six, ovate, villous, inserted into the receptacle of the flower, opposite to the calyx. *Stam.* Filaments eighteen, inserted into the same part; anthers roundish, of two cells.

*Pist.* Germen inferior, crowned by the calyx; styles three; stigmas obtuse. *Peric.* and *Seed* unknown.

Ess. Ch. Calyx in six deep segments. Petals six, villous. Stamens three to each petal. Germen crowned with the calyx.

1. *N. guianensis*. Aubl. t. 237.—A tree, whose trunk rises to the height of twenty-five feet, and is one and a half in diameter, with a reddish, wrinkled, and cracked bark. The wood is white and soft. The branches spread in every direction. Leaves alternate, on very short and slender stalks, elliptical, smooth, serrated, with a blunt point. Stipules small, in pairs at the base of the footstalks, deciduous. Flowers small, greenish, in slender, axillary, long-stalked spikes, each flower accompanied by a small scale-like bractea.

This tree is a native of the woods of Guiana, flowering in November. Jussieu ranges the genus next after *Homalium*, to which it appears to have some affinity; but the barbarous name is inadmissible, and can only be tolerated till enough is known of the plant to establish its generic character with certainty.

NAPLES, in *Geography*, a kingdom of Italy, comprehending ancient Samnium, Apulia, Campania, Lucania, and Bruttium, and bounded on the N.W. by the province of Campagna di Roma, Umbria, and the marquise of Ancona; on the N.E. by the Adriatic, and on its other parts by the Mediterranean. It lies between 37° 46' and 42° 55' N. lat., and between 13° 20' and 19° 15' E. long.; its greatest length from S.W. to N.E. being 450 Italian miles, its greatest breadth 140, and its circuit 1468. According to Zimmermann, it contains 20,384 square miles. This country is in general mountainous, or rather hilly; it is hot, and it is very rarely that ice, or even snow, is observed in the plains. The soil is exceedingly fertile, producing all kinds of grain, with the finest fruits and vegetables; but it is badly cultivated. It is calculated that the culture of corn employs ten persons, and that of the vine at least twenty. Corn is chiefly exported from the provinces of Capitanata, Bari, Otranto, Abruzzo, Molise, Calabria, and Basilicata, which supply the internal consumption of the kingdom, and the foreign markets. The produce of the Terra di Lavoro and Salerno is reserved for the use of the capital. The exports of the kingdom of Naples are wheat, barley, legumes, Indian corn, hemp, linseed, cummin, fennel, and anniseeds; wool, oil, wine, cheese, fish, salt flesh, honey, wax, fresh and dry fruit, manna, saffron, liquorice, gums, locust beans, capers, lupins, macaroni of various sorts, salt, potash, brimstone, nitre, argal, pitch, tar, sumach, skins, cattle, oranges, lemons, brandy, vinegar, metals, minerals, marble, silk, hemp, flax, cottons, and various sorts of manufactures. Horses and cattle might also become valuable articles of exportation, if the breed were duly regarded. The provinces that abound most in oil, are Bari, Otranto, Calabria, and Abruzzo. The best almonds are obtained from Bari, whence they are exported to Venice and Trieste. The annual produce of silk in the kingdom is computed at about 800,000 lbs. weight, half of which is supposed to be wrought at home, and the other half exported raw. The exportation of thrown silk, upon an average of many years, amounts to 148,217 lbs. The best cotton is in the province of Otranto. In Calabria there are natural mountains of salt, which is stronger and more active than sea-salt. Among the chief articles imported into Naples, we may enumerate the following; viz. from England, woollen goods of all sorts, silk and worsted stockings, hats, tanned hides, lead, tin, pepper, hardware, linens, handkerchiefs, fans, canes, gums, dyeing woods, drugs, watches, clocks, mathematical instruments,



## NAPLES.

struments, household furniture, salt cod, pilchards, herrings, coffee, tea, cocoa, sugar, and occasionally calicoes, and East India goods:—from Holland, cinnamon, cloves, nutmegs, pepper, medicinal drugs from the East and West Indies, fine cloths, particularly the fine, called Segovia, linen for shirts and other uses, muslins, chintz, calicoes, several sorts of cocoa, whalebone, tobacco, silk stuffs, and velvet:—from France, an immense quantity of sugar, indigo, coffee, dyeing woods, verdigris, Levant drugs, cocoa, hardware, silk stuffs, gold and silver sayes of Le Mans, deroys, cloth of Elbœuf, and all sorts of women's apparel:—from Spain, cochineal, dyeing woods, cocoa, hides, salted and in the hair, medicinal American drugs, Jesuits' bark, farsaparilla, jalap, balsam of Peru, ipecacuanha, cloths of divers sorts, wine, tobacco, snuff of Seville and Havana, lead, gun-barrels, honey, &c.;—from Portugal, Brazil sugar, tobacco, cocoa, drugs, hides, &c.;—from Venice, books, cordovans, looking-glasses, crystals and glasses of all sorts, Padua cloths, called Venetian sayes, for the consumption of the provinces, fine Verona cloths, equal to English scarlet, stockings, woollen caps, fine hats, wax candles, white loaf sugar, fine linen, medicinal and Levant drugs, all sorts of paints, sublimate, cinnabar, quicksilver, turpentine, dragon's blood, iron of divers sorts of the manufactures of Germany and Brescia, paper, &c.:—from Genoa, American goods from the Spanish main, and from the Portuguese East Indies, velvets, iron in great quantities, nails, ordinary hats, wax from Tunis and the African coast:—from Leghorn, all sorts of goods at second hand from the Levant, Barbary woods, linens of Egypt, wax, and many silk manufactures;—from Petersburg, hides, wax, iron, furs, &c.;—from Sardinia, an immense quantity of tunny fish and cheese:—from Germany, Silesia linens of all sorts, white and painted, iron of divers manufactures, vitriol of Hungary, crystals of Bohemia, large glasses for watches and windows, hats and goods of the new Vienna fabric, turpentine, quicksilver, hardware, manufactures of Osnaburg and Nuremberg, copper, tin plates, boards, cloth, &c. The duties in general upon goods imported into the city of Naples, amount to about 25 *per cent.*; sugar and wax pay 40 or 50 *per cent.* upon the market price. The duty upon sugar produces about 80,000 ducats annually. Calabria affords a great quantity of *manna*, which fee; and also excellent saffron. Here also are obtained alum, vitriol, sulphur, rock crystal, marble, and quantities of minerals. Glass-works constitute a very beneficial branch of trade, and also the Neapolitan horses, which are much esteemed. The wool of the sheep is fine and good, and silk is exported to a considerable value. Of the filaments, or a kind of hair or wool, of an olive-green, growing on some shell-fish, at Malta, Corsica, Sardinia, and the gulf of Venice, are made waistcoats, caps, stockings, and gloves, warmer than the wool, and though not so fine and soft as silk, yet always retaining a peculiar gloss. The silk, woollen, and other manufactures, together with the improvement of arts, owe their first establishment to Ferdinand of Arragon, who patronised them in a very liberal manner. These manufactures, joined to the native produce, are a source of considerable trade to the kingdom of Naples.

Among the chief mountains of Naples are the Apennines, which extend through the whole length of the country, and terminate at the straits of Sicily. (See APENNINES.) Of rivers there is not any one of note in the kingdom; but small streams descend, in every direction, with rapidity from the interior parts, and lose themselves in the sea. The most remarkable natural curiosity is Vesuvius, an insulated mountain, well known for its fiery eruptions. (See VESUVIUS.) A considerable part of this country, as well as other pro-

vinces in Italy, has been at remote periods affected by fire. This fact is sufficiently testified by the present appearance of the country. Naples, Rome, and most of the ancient Roman highways, are paved with lava, and the foundations of the houses in the subterraneous city of Herculaneum, are composed of the same materials. All the mountains and hillocks in the vicinity of Naples are merely a mass of various sorts of matter vomited forth by volcanos which no longer exist, and whose eruptions, anterior to history, have probably formed the ports of Naples and Puzzuoli. The Apennine mountains exhibit a considerable number of visible fires under different forms: and the earthquakes to which this country is subject have distressed its inhabitants with frequent apprehensions and calamities. The swarms of lizards and scorpions that infest it are likewise always alarming, and sometimes injurious and fatal. The provinces of which the kingdom of Naples consists were formerly a part of the dominions of the Roman republic, and afterwards of the emperor. After the fall of the Roman empire, this part of Italy underwent various revolutions. The powerful princes of Benevento survived the conquest of the north of Italy by Charlemagne; and with other potentates in this quarter acknowledged the supremacy of the Greek empire, from which Sicily had been wrested A.D. 828, by the Saracens, who possessed it till the year 1058. Both Saracens and Greeks were afterwards expelled by the Normans; and the Norman leaders became dukes of Apulia, Calabria, and Sicily; and Roger was named king of Sicily by the pope, A.D. 1130. The Norman line continued till their kingdom was subdued by Henry VI., emperor of Germany. After internal contests, Charles of Anjou became king of Sicily in 1266: after the Sicilian vespers, 1282, Sicily was seized by a fleet sent by the kings of Arragon; but Naples continued to acknowledge the line of Anjou, which expired in the infamous Jean, 1382. René of Anjou, king of Naples in 1435, was the father of Margaret, wife of Henry VI. of England; but the French line failed in 1481, in Charles count de Maine, who named Louis XI., king of France, his heir, whence sprung the pretensions of France to the kingdom of Naples. The Spanish line of Naples and Sicily continued till 1714, when they passed to the house of Austria; but were transferred to that of Bourbon in 1736, in the person of Don Carlos, duke of Parma and Placentia, son of Philip V. king of Spain, and Elizabeth of Parma, who succeeding to the crown of Spain in 1759, conferred his Italian kingdom on Don Ferdinand, his third son, who married the sister of the emperor of Germany in 1768. The kingdom of Naples, in consequence of subsequent revolutions, was assigned to prince Joseph, the brother of the French emperor, without a single struggle; the people having been so much oppressed by taxation, that a change of masters had become an object of indifference, if not of hope.

The Jews came into this kingdom about the year 1200; but in 1540 were expelled; however, they obtained here, as well as in Sicily, in 1740, exemptions and privileges beyond what they enjoyed in any part for many centuries past. The Neapolitan nobility constitute a numerous body; and they are excessively fond of splendour and show. This appears in the brilliancy of their equipages, the number of their attendants, the richness of their dresses, the grandeur of their titles, and the magnificence of their entertainments. Dr. Moore, in his "View of Society and Manners in Italy," (vol. ii.) informs us, that the king of Naples counts 100 persons with the title of prince, and a still greater number with that of duke, among his subjects. Six or seven of these have estates, which produce from ten to



to twelve or thirteen thousand pounds a-year; but the annual revenue of most is not above one or two thousand pounds. As to the inferior orders of nobility, they are much poorer; many counts and marquises not having above three or four hundred pounds a-year of paternal estate. The hereditary jurisdiction of the nobles over their vassals, subsists, both in the kingdom of Naples and Sicily, in the full rigour of the feudal government. The peasants therefore are poor; and it depends altogether on the personal character of the masters, whether their poverty is not the least of their grievances. If the land was leased out to free farmers, whose property was scarce, and the leases of a sufficient length, to allow the tenant to reap the fruits of his own improvements, the estates of the nobility would, without doubt, produce much more. The landlord might have a higher rent paid in money, instead of being collected in kind, which subjects him to the salaries and impositions of a numerous train of stewards: and the tenants would be enabled to live much more comfortably, and to lay up every year, a small pittance for their families. But such is the love of domineering, that many persons would rather submit to be themselves slaves to the caprices of an absolute prince than become perfectly independent, on the condition of giving independence to their vassals. Although the Neapolitan nobility still retain the ancient feudal authority over the peasants, yet their personal importance depends, in a great measure, on the favour of the king; who, under pretext of any offence, can confine them to their own estates, or imprison them at pleasure; and who, without any alleged offence, and without going to such extremes, can inflict a punishment, which they will sensibly feel, by not inviting them to the amusements of the court, or not receiving them with smiles when they attend on any ordinary occasion. The government of this kingdom is nearly despotic. The laws of it are contained in the "Codex Carolinus," published in 1754. The religion of Naples is the Roman Catholic, but the Neapolitans have always resolutely opposed the introduction of the inquisition; and independently of this, no papal bulls or mandates can be made public without the king's "exequatur." The number of monasteries and convents is very great, and the clergy, who are very numerous, are wealthy, whilst the laity are poor. The number of archbishoprics in the kingdom is no less than 21, and that of bishoprics 125; but here is no universality of any reputation. The ecclesiastics are computed at 200,000; and it is supposed that about one-half of the lands is in their possession.

The kingdom of Naples is divided into twelve provinces, called "Giustizierati," or jurisdictions, containing 2067 universita, under the denomination of cities, towns, and villages. This division is commonly attributed to the emperor Frederick II. The provinces are Terra di Lavoro, Principato Citra, Principato Ultra, Capitanata, Molise, Abruzzo Citra, Abruzzo Ultra, Bari, Otranto, Basilicata, Calabria Citra, and Calabria Ultra; which see respectively. An estimate of the population of this kingdom is published annually by authority. In the year 1767, there were 1,819,267 males, 1,886,875 females, and 107,612 ecclesiastics, secular and religious, 81,898 males, and 76,770 females were born, and 123,041 of both sexes died: in 1777, 2,092,745 males, 2,124,030 females, and 94,728 ecclesiastics: in 1778, the number of inhabitants amounted to 4,564,445; in 1779, to 4,651,293.

NAPLES, the chief city of the above-described kingdom, situated in the country of Lavoro, partly on a mountain, and partly towards the sea, and esteemed, after Constantinople, the most beautiful capital in the world. This city

was founded by the Greeks, and their choice of its situation is one proof, among many others, of the fine taste of that ingenious people. The bay is about 30 miles in circumference, and 12 in diameter; it has been called "Crater" from its supposed resemblance to a bowl; which bowl is ornamented with the most beautiful foliage, with vines, olive, mulberry, and orange trees, with hills, dales, towns, villas, and villages. At the bottom of the bay, the town is built in the form of an amphitheatre, sloping from the hills towards the sea. Independently of its situation, Naples is a very beautiful city. Although the style of architecture is inferior to that of Rome, and Naples cannot vie with this city in the number of palaces, or in the grandeur and magnificence of the churches, the private houses in general are better built, and are more uniformly convenient: the streets are also broader and better paved. No street in Rome equals in beauty the Strada di Toledo at Naples: and still less can any of them be compared with the beautiful streets which are open to the bay. This, says Dr. Moore, is the native country of the zephyrs; here the excessive heat of the sun is often tempered with sea-breezes, and with gales, wafting the perfumes of the Campagna Felice. The houses, in general, are five or six stories in height, and flat at the top; on which are placed numbers of flower vases, or fruit trees, in boxes of earthenware, producing a very gay and agreeable effect. The fortress of St. Elmo is built on a mountain of the same name, and the garrison stationed in it has the entire command of the town. A little lower on the same mountain is a convent of Carthusians, upon which a large sum has been expended in order to render the buildings and gardens equal in point of beauty to the situation. Although Naples is excellently situated for commerce, and no kingdom produces the necessaries and luxuries of life in greater profusion, yet trade languishes; the best silks come from Lyons, and the best woollen goods from England. The chief articles manufactured here are silk stockings, soap, snuff-boxes of tortoise-shell, and of the lava of Mount Vesuvius, tables, and ornamental furniture of marble. They are thought to embroider here better than in France, and their macaroni is preferred to that made in any other part of Italy. The Neapolitans excel also in liqueurs and confections. The walls of Naples form a circuit of nine Italian miles; but including the suburbs, the entire circumference cannot be less than 18 or 20 Italian miles. It is embellished by a considerable number of fountains, furnishing indifferent water, and water is also conveyed to the city, from the foot of Mount Vesuvius, by a very grand aqueduct. It swarms with princes, dukes, marquises, and other nobility, to whom are appropriated five large piazzas; and the commonalty have also their peculiar piazza; the citizens forming a society of their own perfectly distinct from the nobility. In the most respectable class of citizens are the lawyers, of whom there is an incredible number in this town. The number of priests, monks, and ecclesiastics of all the various orders that swarm in this city is prodigious, possessing, as it is said, above one-third of the revenue of the whole kingdom, besides what some particular orders acquire by begging for the use of their convents. The unproductive wealth, which is lodged in the churches and convents of this city, amounts to a very large sum; and though the churches and convents of Rome surpass those of Naples in point of architecture, yet the latter are superior to the former in riches, in the value of their jewels, and in the quantity of silver and golden crucifixes, vessels, and implements of various kinds. The monasteries and convents of both sexes are computed at 149, besides which here are 34 houses for poor boys, girls, and



and women, 11 hospitals, 4 capital churches, 32 parish churches, 70 other chapels and churches, and upwards of 130 oratories or chapels of religious fraternities. Naples is the see of an archbishop, whose cathedral, called "Il Duomo," is a fine Gothic building. The greatest curiosity in it is the magnificent chapel, called "Il Tesoro," where Januarius's head, and some of his blood are kept. (See JANUARIUS.) The "Lazzaroni," or blackguards, form a considerable part of the inhabitants of Naples; and these have, on some occasions, had the government for a short time in their hands. They are computed at above 30,000; most of them have no fixed habitations, but sleep every night under porticos, piazzas, or any kind of shelter they can find. Those of them who have wives and children, live in the suburbs of Naples, near Pauphilippo, in huts, or in caverns, or chambers dug out of that mountain. Some of them gain a subsistence by fishing, others by carrying burdens to or from the shipping: many walk about the streets ready to run on errands, or to perform any labour for a small recompence. They have been generally represented as a lazy, licentious, and turbulent class of people: but Dr. Moore has a more favourable opinion of their character; ascribing their idleness to want of employment. The ecclesiastics are estimated at about 10,000; and the whole number of inhabitants at 350,000. There is not perhaps a city in the world with the same number of inhabitants, in which so few contribute to the wealth of the community by useful, or productive labour, as Naples; but the number of priests, monks, fiddlers, lawyers, nobility, footmen, and Lazzaroni, surpass all reasonable proportion.

For the defence of the city, and keeping it in subjection, there are five castles, consisting only of very strong walls. The Castello Nuovo communicates by a covered way with the king's palace, and on one side is contiguous to the sea. Its subterraneous works and mines are admirable. At its entrance stands a triumphal arch, of very curious sculpture. The Castello del Uovo, so called from its oval figure, is strong, and stands on a rock in the sea: of the castle St. Elmo we have spoken already. Provisions are plentiful and cheap at Naples, so that the inhabitants procure ample supplies with little labour. Many of the streets are crowded more than those of London and Paris by the number of idle people, who, having no public walks or gardens, amuse themselves with traversing the streets. But, notwithstanding their want of employment, riots and outrages seldom occur, which is partly owing to the national character of the Italians, and partly to the universal sobriety of the people. The great luxury of the inhabitants is iced water and lemonade; these are carried about in little barrels, and retailed in halfpenny's worth. Nothing would be more likely to cause disturbance than the want of ice, the monopoly of which is granted to certain persons, who sell it about 3s. 4d. a pound.

According to Diodorus Siculus, the founder of this city was Hercules; others say, that it was built by the Phœceans, and others ascribe it to Ulysses, who named it Parthenope, in memory of one of the Syrens, who, according to the fable, not being able to detain that hero by the harmony of her voice, was so irritated and despairing, that she threw herself from a precipice, and was buried on the spot where now stands the church of St. Gio Maggiore. Other authors deduce its name from Parthenope, daughter to a king of Thessaly, who conducted hither a colony from the island of Eubœa. Others, again, attribute its origin to one Phalarus, tyrant of Sicily; whereas Strabo reports, that it was founded by the Rhodians long before the institution of the Olympic games. However this be, it is most probable

that Naples was founded by the Greeks, and that it existed long before Rome itself. In 1799, Naples was taken by the French; 100 miles S.E. of Rome. N. lat. 40° 54'. E. long. 13° 30'.

Naples, with so many advantages over other great cities, in situation, climate, antiquities, harbour, &c. has likewise, at all periods of its history, distinguished itself by the cultivation of the arts, equally, if not in a superior manner, to any other city in Europe (see *Vicende della Cottura, di Nipoli Signorelli*); but in none so much as music during the last century, by the numerous great composers and performers which have issued from its famous seminaries, the conservatories, under the direction of Alessandro Scarlatti, Leo, Durante, and Sala, whose élèves have not only done honour to Italy, but supplied all the rest of Europe with men of such eminence in their art, as no other city on the globe can boast; which will be readily allowed by all those who love and have cultivated music, when they are reminded that not only the two Scarlattis, Leo, Pergolesi, Durante, Porpora, Vinci, Jomelli, Perez, Piccini, Sacchini, Anfossi, Traetta, Rinaldo di Capua, Guglielmi, Genaro Manna, Ciccio de Maja, Latilla, Sala, Cimarosa, Paefiello, were all Neapolitans.

These were composers; but the eruptions of Mount Vesuvius have not been much more wonderful than some of the Neapolitan fingers, such is Nicolini, Farinelli, Caffarelli, Aprile, De Amicis, Millico and Pacchierotti.

NAPLES *Tellow*, or *Giallolino*, is a porous, heavy, granular substance of an earthy nature; it is friable, adheres a little to the tongue, and, when exposed to the air, neither undergoes decomposition nor changes its colour, which is a pale orange yellow. Reduced to an impalpable powder it remains suspended in the water for a considerable time, and at last falls down as a pasty mass. Boiled in water the fluid acquires a salt taste. It does not effervesce with acids, but is partly dissolved by nitro-muriatic acid; it is fused with difficulty, and in this state undergoes no change, except that its colour becomes rather more red. When fused with colourless glass the product is a milk white enamel, which proves the absence of iron. When mixed with inflammable substances a regulus is obtained, which appears to be a compound of lead and antimony.

This article is principally brought to us from Naples; generally in the shape of an earthy crust, from three to four lines thick, and sometimes exhibiting the shape of the vessel in which it has been suffered to harden. It is also often seen as powder.

It is not known with certainty at what period this substance has become an object of commerce. Pomet is the first writer on drugs who makes mention of Naples yellow, and he observes that it is extremely scarce. Kunkel, who gives a pretty complete list of the substances used for colouring glass and enamel, is silent respecting Naples yellow or giallolino; but if the name of this production can be considered as a proof of its antiquity, it may be said to have been known in Italy as early as the end of the 16th century. Ferrante Imperato speaks of two sorts of giallolino, one of which appears to be the oxyd of lead, called *Massicot*, while the other is unquestionably the substance under consideration. But no writers on colours appear to have been acquainted with the nature of the true Naples yellow; some have considered it as a volcanic production of mounts Vesuvius and Etna; others as a variety of native ochre; Guettard (*Mém. de l'Acad. des Sciences, 1762*) mistook it for a solar earth; but Pott (*Lithogæognosie, p. 2.*) is nearest the truth, for he suspects it to be the result of artificial preparation. Fougereux (*Mém. de l'Ac. des Sciences, 1766*)



subscribed to Pott's opinion, and pointed out a method of preparing this colour by boiling a mixture of twelve parts of white lead, one of alum, one of fal ammoniac, and three parts of oxyd of antimony (Ant. diaphoreticum.) But before Fougereux, (who had probably acquired some knowledge of this process on his travels in Italy,) a more exact account of the manner of preparing this colour had been given by Giambattista Passeri in his interesting work on porcelain painting. The ingredients, according to this author, are, one pound of antimony, one and a half pound of lead, one ounce of a salt which he calls *allume di feccia*, and the same quantity of common salt. It is probable that this receipt was not unknown to Fougereux, who mistook the *allume di feccia* for common alum. But professor Beckmann (from several circumstances relative to the various methods of preparing this colour described by Passeri) is of opinion that *allume di feccia* is meant for tartrate of potash (salt of tartar), and indeed Passeri often makes use of the word *feccia* alone, which certainly implies tartar. The following are the different modifications proposed by this author:

1. Six pounds of lead, four pounds of antimony, one pound of tartrate of potash (*feccia*).
2. Three pounds of lead, four pounds of antimony, one pound of tartrate of potash (*feccia*), six ounces of common salt.
3. Five pounds of lead, four pounds of antimony, six ounces of tartrate of potash (*feccia*).
4. Four pounds of lead, two pounds of antimony, six ounces of tartrate of potash (*feccia*).
5. One and a half pound of lead, one pound of antimony, one pound of tartrate of potash (*feccia*), and one pound of common salt.
6. Three and a half pounds of lead, two pounds of antimony, and one pound of tartrate of potash (*feccia*).

The metallic substances are employed in the state of oxyds.

The difference in the proportion of the ingredients, as given above, is indeed not very considerable, but sufficiently so to produce those different tints which we observe in the yellow employed by different masters. See Passeri in *Nuova raccolta d'opuscoli scientifici*, vol. iv.

After the publication of Fougereux's Memoir, De Lalande described another method of preparing the Naples yellow; which he had obtained from prince San Severo. According to him only lead and antimony are employed.

Take lead perfectly oxydated, pass it through a sieve, and mix it with a third of its weight of antimony prepared in the same manner. After this, take a large dish of unglazed earthen ware, cover it with a sheet of white paper, and lay on the powder so as to be two inches in thickness. These dishes are to be placed at the upper part of a potter's furnace, where the reverberation of the flame is sufficient to produce the desired result. After having been exposed for some time to this moderate degree of heat, a hard yellow coloured mass will be found, which is to be triturated with water on a stone, and afterwards put into vessels and dried for use.

A necessary precaution, in the preparation of this colour, is to avoid the use of iron, the contact with this metal imparting to it a dirty and sometimes a greenish tint; whence also in grinding the colour on the stone, a spatula of ivory is to be made use of for the purpose of collecting the mass.

The Naples yellow is principally used for painting in oil, it possessing much more richness and brilliancy than the ochres, masticot, or orpiment, and being far more durable. It may also be advantageously applied for enamel painting.

NAPLOSA. See NABLOUS.

NAPO, in *Geography*, a town of South America, on a river of the same name, in the audience of Quito; 200 miles S.E. of Quito. The river rises about 20 miles S. of Quito, and after a south-easterly course of about 360 miles, discharges itself into the river of the Amazons, S. lat.  $30^{\circ} 30'$ . W. long.  $71^{\circ} 10'$ .

NAPO-BRASSICA, in *Botany*, &c. See BRASSICA.

NAPOLI de Romania, in *Geography*, anciently "Naupliis," a sea-port town of European Turkey, in the Morea, situated on a peninsula, in a bay of the Mediterranean, called the "Gulf of Napoli." The harbour is spacious, though narrow at the entrance, and is defended by a strong castle. It is the see of a Greek archbishop, and inhabited by Turks, Jews, and Christians, who perform their own worship respectively, without controul; 60 miles S. of Livadia, N. lat.  $37^{\circ} 39'$ . E. long.  $22^{\circ} 48'$ .

NAPOLI di Malvasia. See MALVASIA.

NAPPA, a town of Hindoostan, in Guzerat; 27 miles S. of Amedabad.

NAPRUNG, a town of Meckley; 25 miles W. of Munnypour.

NAPUS, in *Botany*, the Navew, Rape, or Cole-seed. A genus of Tournefort's thus curiously defined. "The *Napus* is a genus of plants differing from *Rapa* (the Turnip) only in a certain peculiar aspect, by which it is easily known to gardeners and husbandmen; it may therefore be referred, by any one who pleases, to the same genus." No figure is given to shew what this "peculiar aspect" is; but Jussieu observes that the root of *Napus* is spindle-shaped, that of *Rapa* spherical, and the calyx in both is of the same colour as the corolla. In this last particular they both differ from the *Brassica* of Tournefort, whose calyx is greenish. They are all three comprised, of course, by Linnæus, and even by Jussieu, under BRASSICA; see that article.

NAPUS, in *Conchology*, a name given to the species of voluta, approaching to the nature of the famous admiral-shell, and more commonly known by the name of the *false admiral*, or *bastard admiral*.

NAPUT, in *Botany*, the name given by the Norwegians to a plant whose root is an excellent remedy for the colic. It grows plentifully in the northern parts of Norway; and is the constant remedy used by the miners for their colics, which are particularly fevere. The taste is said to be agreeable, being at first chewing somewhat like a raddish, but afterwards having the flavour of the garden angelica. Phil. Trans. N<sup>o</sup> 114.

NAR, in *Geography*, a town of the duchy of Warsaw; 80 miles E. of Warsaw.

NARA, a town of Japan, in the island of Nippon; 24 miles from Meaco.—Also, a town of Hindoostan, in Golconda; 28 miles S.W. of Indelavoy.

NARACALLY, a town of Hindoostan, in the circar of Aurungabad; 53 miles E.S.E. of Aurungabad.

NARADUCONDA, a town of Hindoostan, in the circar of Mahur; 14 miles N. of Neermul.

NARAGANSET, or NARRAGANSET Bay, a bay of America, which embraces many fruitful and beautiful islands, the chief of which are Rhode island, Canonical, Prudence, Patience, Hope, Dyer's, and Hogs islands. The principal harbours are Newport, Wickford, Warren, Bristol, and Greenwich, besides Providence and Patuxet: Taunton river, and many smaller streams, fall into this capacious bay; which affords fine fish, oysters and lobsters, in great plenty.

NARAGUNTLA, a town of Hindoostan, in the Carnatic; 5 miles E.S.E. of Chittoor.

NARAH,



**NARAH**, a town of Hindoostan, in Bahar; 45 miles E. of Bettink.

**NARADIPETTA**, a town of Hindoostan, in the Carnatic; 8 miles S. of Chittoor.

**NARAINGUM**, a town of Hindoostan, in Dowlatabad; 10 miles S.E. of Junere.

**NARAINPOUR**, a town of Bengal; 5 miles S. of Koonda.

**NARAMPUKRY**, a town of Hindoostan, in Bahar; 32 miles S.E. of Bettiah.

**NARAN**, a town of Hindoostan, in Bahar; 42 miles E. of Hajypour. N. lat.  $25^{\circ} 41'$ . E. long.  $86^{\circ} 10'$ .

**NARANGABAD**, a town of Hindoostan, in Oude; 25 miles N.W. of Kairabad. N. lat.  $27^{\circ} 50'$ . E. long.  $80^{\circ} 55'$ .

**NARANGPOUR**, a town of Hindoostan, in Bengal; 24 miles W. of Comillah.

**NARANGUNGE**, a town of Bengal, on the Dulkaferi; 7 miles S.E. of Dacca. N. lat.  $23^{\circ} 37'$ . E. long.  $90^{\circ} 38'$ .

**NARANGUR**, a town of Bengal; 18 miles S. of Midnapour. N. lat.  $22^{\circ} 10'$ . E. long.  $87^{\circ} 30'$ .

**NARANJA**, a town of Africa, in the kingdom of Fez; 75 miles N. of Fez.

**NARANJAL**, a town of South America, in the audience of Quito; 12 miles S.E. of Guayaquil.—Also, a river of Peru, which runs into the Pacific ocean, S. lat.  $2^{\circ} 28'$ .

**NARANJOS**, a town of Peru, in the diocese of Truxillo; 15 miles S. of Chacapoyas.—Also, two small islands in the Spanish main, near the coast of Darien. N. lat.  $9^{\circ} 30'$ . W. long.  $79^{\circ} 58'$ .—Also, a cluster of small islands, among the Philippines; 12 miles N.E. of Masbate. N. lat.  $12^{\circ} 29'$ . E. long.  $123^{\circ} 54'$ .

**NARANPOUR**, a town of Hindoostan, in Bahar; 25 miles S.S.W. of Arrah.—Also, a town of Bengal; 10 miles S. of Kishenagur.—Also, a town of Hindoostan, in Oude; 40 miles N.N.E. of Munickpour.—Also, a town of Bengal; 30 miles S.E. of Dacca.

**NARAPILLY**, a town of Hindoostan, in Golconda; 10 miles E. of Hydrabad.

**NARBETH**, a market and post-town in the hundred of that name, and county of Pembroke, South Wales, is situated at the distance of  $229\frac{1}{2}$  miles N.W. from London, and 12 miles N.E. from Pembroke. This place has greatly increased of late years, both in size and opulence. In 1801, the number of houses and inhabitants in the town appeared, from the parliamentary returns, to amount to 340 of the former, and 1531 of the latter; but in 1811, the same authority states the houses at 402, and the population at 1779 persons. The market day is Thursday, and there are six well attended fairs during the year, which privileges have been enjoyed since the reign of James II. A mail coach passes through the town every day, to and from London to Milford. Here are held the petty sessions for the hundred. The church is an ancient building, founded by sir Andrew Perrot, in the reign of Henry II. The living is a rectory in the gift of the crown, and one of the most valuable preferments in the diocese of St. David's. On a considerable eminence, close to the town, are the ruins of the castle of Narbeth, which are now of very small extent; but from the outline of walls that may still be traced, it must at one time have been a very large and magnificent pile, and of great importance as defending one of the most frequented passes in the county. Hence it was frequently assaulted, and sometimes taken, by the Welsh princes, during their desultory wars to repel the aggressions of the Anglo-Normans, and afterwards the English.

About two miles north-east from Narbeth stand the ruins

of Lawhaden castle, anciently the palace of the bishops of St. David's, and consequently that from which they derived their title to a seat in the house of peers. This superb edifice crowns the summit of a steep, wooded hill, and though apparently placed on the very edge of a precipice, was moated and approached by a drawbridge, at the grand entrance, which was under a gate-way between two octagon bastions of very massive architecture. The whole building has been formerly very spacious and sumptuous; as is evident from the present remains, though these have been much deteriorated of late years by the barbarous practice of using its materials for the repair of the roads. It is constructed entirely of cut stone, and highly finished, and within it is an elegant chapel, which was built by bishop Vaughan. At what era this castle was erected is uncertain; but Mr. Fenton inclines to think that it is chiefly indebted for its grandeur to Thomas Beke, who was bishop of St. David's from 1280 to 1293, and made this the principal place of his residence. Attached to it is a large park and a forest, which Leland tells us were well stocked with red deer in his time. The keepers of this forest were frequently gentlemen of the first families in the county; a circumstance alone sufficient to indicate the high style in which these ancient bishops were accustomed to live. Two miles to the south-east of this palace is Slebech hall, a very elegant mansion, which occupies the site of an ancient commandery of knights hospitallers, though not a trace of the establishment of this church-militant now remains, except the church itself, a very small but respectable edifice, standing close upon the river Cleddy, which skirts the pleasure-grounds, and contributes greatly to their beauty. Picton castle, lying eastward from Slebech, though built in the reign of William Rufus, is, by the hereditary attention of its possessors, still almost in as good condition as when first erected. This mansion of the noble family of Philips is surrounded by very extensive plantations and gardens, laid out with great taste. Within these is an old encampment, called Castle-lake, a post of considerable strength by nature, and rendered more so by a very high agger on its western side. At Templeton, a village south-east from Narbeth, is a chapel, now in ruins, which belonged to the knights of Slebech, who are said to have much frequented this place during their hunting parties. In the centre of the main street are the ruins of an ancient cross. The houses here, though thinly scattered, are well built, and preserve the vestiges of former opulence. Indeed there can be no doubt of this having been formerly a considerable village; and by some it is conjectured to have been early a manufacturing town subordinate to the great colony of Flemings, who established themselves at Tenby. Fenton's Historical Tour through Pembrokeshire, 4to. 1811. Carlisle's Topographical Dictionary of Wales, 4to. 1812.

**NARBIMSKOI**, a lake of Russia, 36 miles in circumference; 220 miles N.N.E. of Turuchansk.

**NARBO**, or **NARBO Martius**, in *Ancient Geography*, a city of Gaul, in Gallia Narbonensis. See **NARBONNE**.

**NARBONENSIS GALLIA**. See **GAUL**.

**NARBONNE**, in *Geography*, a town of France, and principal place of a district, in the department of the Aude, situated on a canal, which communicates with the Aude. When the Romans first entered Gaul, this was a flourishing city, and they made it a Roman colony, under the appellation of "Narbo Martius." About 116 years B. C., Julius Cæsar sent hither a new colony of the veterans of the 10th legion; and under Augustus it was the capital of "Gallia Narbonensis." Under the kings of France, it was the see of an archbishop, the seat of an admiralty, and the residence of a governor; and it contained two collegiate churches,



churches, besides the cathedral, a college, two seminaries, thirteen convents, and several hospitals. Its lords were formerly powerful, and it was strongly fortified; but its only defence at present is a wall, flanked with bastions. Its population is not proportional to its extent; nor is it rich or commercial. The town contains 9086, and the canton 12,722 inhabitants, on a territory of 222½ kilometres, in 9 communes. Narbonne has been reckoned famous for its honey, which is beautifully white, and delicate in its flavour. At Narbonne there is a little stream, which, by the industry of the inhabitants, proves to them a more certain source of wealth than if its lands were gold. It discharges itself into a canal by more than half a mile in length, by the side of which they have extensive gardens, watered from it by hydraulic machines of remarkable simplicity. These are described by Mr. Townsend in his *Journey through Spain*, vol. i. N. lat. 43° 11'. E. long. 3° 5'.

**NARBOROUGH ISLAND**, a small island in the South Pacific ocean, discovered by sir John Narborough, affording wood and water, but destitute of inhabitants. S. lat. 45° 12'. W. long. 76° 12'.

**NARCE**, *ναρξν*, in *Medicine*, a torpor, stupor, or dullness of sensation, used either for a natural stupidity, or for that stupefaction of the senses brought on by medicines, to alleviate the violence of pains.

**NARCISSI**, in *Botany*, the 17th natural order in Jussieu's system, or the 7th of his third class. It is named, as usual, from the most common or considerable genus of the whole, and is nearly equivalent to the 9th order of Linnæus, *Spathaceæ*.

For the full characters of Jussieu's third class, see *LILIA*. The order of *Narcissi* is thus described.

*Calyx* (that is the *corolla* of Linnæus and most authors) superior, or sometimes inferior, coloured; its base tubular; its limb in six deep segments, for the most part equal. *Stamens* six, inserted into the tube, their filaments distinct, rarely united at the base. *Germen* simple, in most instances inferior, in a few superior; style single; stigma either three-lobed or simple. *Capsule* either inferior or superior, of three cells and three valves, with many seeds; (in *Hemanthus* it is pulpy, with only three seeds.)

The root is mostly bulbous. *Leaves* radical, sheathing. *Flowers* terminating a radical stalk, accompanied by sheaths, solitary or umbellate, and having a common sheath, either simple or divided, embracing the umbel.

Section 1; germen superior, consists of *Gethyllis*, *Bulbocodium*, *Hemerocallis*, *Crinum*, and *Tulbagia*.

Section 2; germen inferior, contains *Hemanthus*, *Amaryllis*, *Pancratium*, *Narcissus*, *Leucoium*, and *Galanthus*.

A third section is subjoined of "Genera not perfectly akin to the *Narcissi*." These are five, *Hypoxis*, *Pontederia*, *Polyanthes*, *Alstroemeria*, and *Tacca*.

This order of Jussieu's is divided by Mr. Brown, the first section, except *Gethyllis*, making his *Hemerocallideæ*, the second his *Amaryllideæ*. He considers the singular genus *Tacca* as intermediate between the *Aroideæ* and *Aristolochiæ* of Jussieu and himself. See *Prodr. Nov. Holl.* v. 1. 340 and 295. *Polyanthes* and *Alstroemeria* are, even by Jussieu, suspected to be nearer related to his *Lilia*.—*Pontederia* is referred by Linnæus to his *Ensatæ*; but belongs to a new order, constituted by Mr. Brown, called *Commelineæ*, a tribe very unsuitably arranged by Jussieu amongst his *Junci*, as we have already hinted. See *JUNCI*.

**NARCISSITES**, in *Natural History*, a name given by some authors to a species of *actæopodium*, from its supposed resemblance to the flowers of the narcissus; others

have called some of the coralloid funguses by that name, and others a species of echinits of the pileated kind.

It is, however, a name that none of them have any title to, since the resemblance will appear very small when nicely considered.

**NARCISSO-LEUCOIUM**, in *Botany*, &c. See *LEUCOIUM*.

**NARCISSUS**, a name adopted from the poets, who have fabled that the flower which bears it originated in the transformation of a beautiful youth, who pined away with admiration of his own image in a fountain. The origin of the word, nevertheless, appears to lie deeper, *ναρκισσος* being derived from *ναρξν*, *stupor*, and alluding to the effects of the smell of a Narcissus. These are frequently an intense headache, and partial loss of recollection, to which the writer of this can bear witness in some of the species, as well as in Honeyuckles, and a few other very sweet flowers. The name of the youth might apply to the stupidity of his passion, and of the flower to its own properties, before Ovid elegantly combined them. The description of Dioscorides, unusually full, leaves no doubt of his *ναρκισσος* being the same as ours, the "white species, purple within," answering exactly to the beautiful, though very common, *N. poeticus* of botanists. Linn. Gen. 161. Schreb. 216. Willd. Sp. Pl. v. 2. 34. Mart. Mill. Dict. v. 3. Ait. Hort. Kew. ed. 2. v. 2. 214. Sm. Fl. Brit. 353. Haworth's Tr. of Linn. Soc. v. 5. 242. Salisb. Prod. 220. Juss. 55. Lamarck Illustr. t. 229. Tourn. t. 185.—Class and order, *Hexandria Monogynia*. Nat. Ord. *Spathaceæ*, Linn. *Narcissi*, Juss.

Gen. Ch. *Cal.* an oblong, obtuse, compressed, membranous sheath, splitting along its flat side, containing one or many flowers, permanent. *Cor.* Petals six, ovate, pointed, flat, equal, inserted into the tube of the nectary on its outside, at some distance above the base. Nectary of one leaf, funnel-shaped, regular, cylindrical below, with a coloured border. *Stam.* Filaments six, awl-shaped, inserted into the tube of the nectary, and shorter than its border; anthers rather oblong. *Pist.* Germen within the sheath, below the corolla, roundish, bluntly triangular; style thread-shaped, longer than the stamens; stigma three-cleft, concave, obtuse. *Peric.* Capsule roundish, with three blunt angles, membranous, of three cells, and three valves, with central partitions. *Seeds* several, globose.

Ess. Ch. Corolla superior, of six equal petals. Nectary funnel-shaped, of one leaf, bearing the petals. Stamens within the nectary. Stigma three-cleft.

This favourite genus has engaged the particular attention of several British botanists, especially Mr. Salisbury, Mr. Haworth, and the late Mr. Curtis; as well as of Mr. Ker-Bellenden, who in his contributions to the continuation of the Botanical Magazine, has attended to this among other liliaceæ genera, or their allies. He thus characterises the habit of *Narcissus*, in p. 925 of that work.

Bulb invested with membranous tunies. Leaves several, in two ranks, linear-strap-shaped, thickish, and somewhat succulent; usually flat, a little depressed above, keeled and ribbed beneath; sometimes rush-like, and half cylindrical, with a slight channel above. Flower-stalk naked, central, mostly compressed, or two-edged. Flowers yellowish or whitish, or partaking of both colours. Style triangular, as if composed of three combined. Capsule membranous. It differs from *Pancratium* in having the stamens unconnected with the central crown or cup of the flower, but more or less cohering with the tube.

The number of species is fourteen in the 14th edition of the Syst. Veg. of Linnæus; Willdenow and Aiton have each



## NARCISSUS.

each seventeen, but each has three species which the other omits. We shall chiefly take these authors for our guides, declining the great multiplication of species to which others are, in our opinion, rather too prone. Three *Narcissi* are found wild in England.

1. *N. poeticus*. Poetic Narcissus. Linn. Sp. Pl. 414. Engl. Bot. t. 275. Redout. Liliac. t. 160. (N. medio purpureus; Ger. em. 123; and with a double flower, 124.)—Sheath mostly single-flowered. Cup of the nectary very short, wheel-shaped, membranous, crenate. Leaves bluntly keeled, reflexed at the margin.—Native of England, Germany, France, Switzerland, and Italy, on open, rather sandy, hills, flowering in May. Wheeler mentions this species as growing on Helicon, and other hills in Greece, upon whose authority it was admitted into the *Prodr. Fl. Græc.*; for Dr. Sibthorp did not meet with the plant himself, though he very justly indicated it, in his manuscripts, as what Dioscorides had mentioned. That ancient writer speaks of the root as emetic, and as useful for burns if applied with honey, or for injurious effects of the sun upon the skin, if used with nettle-seed and vinegar. He also celebrates its effects in cleansing ulcers and ripening abscesses.—With us the plant is chiefly valued for the beauty and fragrance of its flower, which is the largest of the white kinds, and known from all others, except the next, by the crimson border of its very shallow, and almost flat, cup of the nectary. The double variety is most frequent in gardens. Sometimes there are two flowers in a sheath.

2. *N. angustifolius*. Narrow-leaved Crimson-edged Narcissus. Curt. Mag. t. 193. Ait. n. 2.—Sheath single-flowered. Cup of the nectary very short, cup-shaped, membranous, crenate. Leaves not broader than the flower-stalk.—Native of the south of Europe. Cultivated in England as early as 1570, according to Lobel, and distinguished by the writers of that period, though confounded with the foregoing by Linnæus, and other modern botanists, till lately. It differs in being scarcely above half so large, with leaves of a narrower proportion and flatter form, and the edge of the nectary more erect. The wooden cut of Dodonæus, cited for this by Mr. Curtis, is what we have quoted from Gerarde under the former, to which it appears to us certainly to belong. Gerarde distinctly notices the present, and mentions its early flowering, which is in the beginning of April, full six weeks before the *poeticus*.

3. *N. biflorus*. Pale Narcissus, or Primrose peerless. Curt. Mag. t. 197. Sm. Fl. Brit. n. 2. Engl. Bot. t. 276. Willd. n. 11. (N. medio luteus; Ger. em. 124.)—Sheath two-flowered. Cup of the nectary very short, wheel-shaped, membranous, crenate. Leaves acutely keeled, inflexed at the margin.—Native of Spain, England, and Ireland. It was gathered on a rabbit-warren at Shorne in Kent, with the *poeticus*, by Mr. Jacob Rayer, but generally blooms a little earlier than that species, and is common in gardens, being valued for its beauty and scent, though the latter soon becomes oppressive in a room. From the first species it differs in the section of the leaves being triangular, and their edges inflexed; the flowers usually two, sometimes one or three, from each sheath; the petals of a cream-colour, or yellowish, not of a pure snow-white; the nectary yellow, with a pale edge, but no crimson circle. All these marks are permanent and invariable, except the number of flowers. Their size is always less than that of the *poeticus*.

4. *N. tenuior*. Slender Narcissus. Curt. Mag. t. 379. Ait. n. 4.—Sheath single-flowered. Cup of the nectary very short, cup-shaped, plaited. Leaves linear-awl-shaped, channelled.—A native probably of Europe, but known to us only as having been procured from the gardens of Hol-

land. Messrs. Grimwood and Barrit are mentioned by Mr. Aiton, as having first cultivated it in 1789. This is a hardy species, flowering in May, and most resembles the last in colour, but the petals are rather more yellow, the edge of the cut erect, more plaited, neither white nor membranous, but brown as the flower advances. The fragrance is considerable. The leaves gradually taper to a blunt point. Stalk round, slender, taller than the leaves, slightly compressed above, and always single-flowered. Germen and tube of the flower slender, standing horizontally. Curtis.

5. *N. incomparabilis*. Peerless Daffodil. Curt. Mag. t. 121. Willd. n. 2. Ait. n. 5. (N. amplius; Salis. n. 17. N. odoratus; Linn. Am. Acad. v. 4. 311. N. omnium maximus; Ger. em. 135.)—Sheath single-flowered. Cup of the nectary bell-shaped, plaited, crisped, half as long as the petals. Leaves acutely keeled.—Native of Spain and Portugal, according to Miller. Parkinson speaks of it as cultivated in 1629, but it was perhaps known here much earlier. He gives a sufficiently expressive figure of this plant, in his Garden of Pleasant Flowers, p. 71. f. 1. It is known by the bell-shaped, wavy, and plaited cup of the nectary, which is much longer than any of the preceding, and of a rich orange colour. The petals are pale yellow, but sometimes almost white. The double variety, *N. incomparabilis*, Rob. Ic. t. 20, in which the colours are most strongly contrasted, is most admired, and called the Butter and Egg Narcissus, or Orange Phoenix. This species is very hardy, flowering in April. The bulbs of the double sort should be taken up yearly, or they are apt to degenerate, or rather to return towards the natural single state of the flower.

Curt. Mag. t. 948 is now considered by the editor a variety of this.

6. *N. Pseudo-narcissus*. Common Daffodil. Linn. Sp. Pl. 414. Willd. n. 3. Ait. n. 6. Engl. Bot. t. 17.) *Pseudo-narcissus anglicus*; Ger. em. 133. *Pseudo-narcissus luteus multiplex*; ibid.)—Sheath single-flowered. Cup of the nectary bell-shaped, erect, crisped, obscurely six-cleft, as long as the ovate upright petals.—Native of England, as well as of Germany, France, Switzerland, and Italy, in rather moist woods or thickets, flowering in March, its growth being rapid, and duration short. The leaves are two or three, glaucous, bluntly keeled. Stalk compressed, two-edged, about the same height, which is scarcely a foot. Flower drooping, not pleasantly scented, with nearly erect petals, of a pale yellow, the long tubular nectary being of a golden hue. Such is the wild plant. The garden varieties differ in the fullness of colour, as well as in the shape and position of their numerous petals, and distorted divided nectary.

7. *N. bicolor*. White and Yellow Daffodil. Linn. Sp. Pl. 415. Curt. Mag. t. 1187. N. albus, calyce flavo, five tubo fimbriato; Rudb. Elyf. v. 2. 70. f. 7.)—Sheath single-flowered. Cup of the nectary bell-shaped, erect, crisped, longer than the ovate, flat, spreading petals. Leaves slightly concave, nearly straight.—Native of the Pyrenées. Common in old gardens, flowering in April or May, a month after the last described, from which it differs in having less glaucous leaves, shorter and horizontal petals; the tube of the nectary being scarcely longer than the germen, whereas in *Pseudo-narcissus* it is thrice as long. Its scent too is much sweeter.

8. *N. major*. Great Yellow Daffodil. Curt. Mag. t. 51 and 1301. (N. major totus luteus, calyce prælongo; Bauh. Pin. 52. Rudb. Elyf. v. 2. 71. f. 9. N. bicolor  $\beta$ ; Willd. n. 4. Ait. n. 7. *Pseudo-narcissus hispanicus*; Ger. em. 133.)—Sheath single-flowered. Cup of the nectary bell-shaped, erect, the length of the oblong oblique petals; its



its margin spreading, lobed, and crisped. Leaves twisted.—Native of Spain. Common with double flowers in gardens, but rarely seen single. The twisted, somewhat glaucous, leaves, very large flower, of an uniform golden yellow, and the other differences expressed in the specific character, seem to us abundantly sufficient to distinguish this from the *bicolor*. It flowers in April, and is very hardy.

9. *N. minor*. Small Daffodil. Linn. Sp. Pl. 415. Willd. n. 5. Ait. n. 8. Curt. Mag. t. 6. (*N. parvus*, totus luteus; Rudb. Elyf. v. 2. 72. f. 11. Pseudo-narcissus minor hispanicus; Ger. em. 133.)—Sheath single-flowered. Nectary inversely conical; its cup six-cleft, crisped, longer than the lanceolate petals. Leaves spreading.—Native of Spain; very hardy with us, flowering in March or April. As the preceding is the largest, this is the smallest of the Daffodils. Its spreading, short, glaucous leaves, and the gradually dilated nectary, not well delineated by the old authors, mark the species well. The petals are of a pale yellow, the cup darker. Mr. Salisbury divides this species into two, by the names of *exiguus* and *pumilus*, but we cannot satisfy ourselves of the propriety of so doing, nor has the measure been adopted by others.

10. *N. moschatatus*. White Long-flowered Daffodil. Linn. Sp. Pl. 415. Herb. Linn. Willd. n. 6. Ait. n. 9. Curt. Mag. t. 924 and 1300. (*N. albus*; Haworth Tr. of Linn. Soc. v. 5. n. 5. *N. candidissimus*; Redout. Liliac. t. 188. *N. albus*, calyce prælongo, flore pendente; Rudb. Elyf. v. 2. 73. f. 16. Pseudo-narcissus albo flore; Ger. em. 134.)—Sheath single-flowered. Flower drooping. Cup of the nectary cylindrical, erect, crenate, furrowed, the length of the oblong twisted petals. Leaves concave, glaucous.—Native of Spain; kept in rather curious gardens, where it is hardy, flowering in April. The long cylindrical cup, longitudinally furrowed, slightly contracted in the middle, rarely a little dilated at the top, of the same length, and cream-coloured white, as the spreading twisted petals, well marks this species. Mr. Ker-Bellenden is disposed to undervalue the labours of Linnæus with respect to this plant, which is nevertheless correctly defined by that author, from a living specimen, raised in the Upsal garden, and preserved in the Linnæan herbarium; nor are we inclined to exchange our great master's "short phrases by way of description," to which he owes his deserved fame, and all natural history its perfection, for the longer, and proportionably feeble, characters of this or other writers, who have nevertheless their use and their merits. It is true that the synonyms of Linnæus are not all correct, in this place any more than in others, and the name of *moschatatus* may have been taken from synonyms, certainly erroneous, of Bauhin and Rudbeck. Muskiness is however one of the most various and evanescent flavours in the scent of plants. The fragrance of *N. moschatatus* is compared by Mr. Ker to ginger. We have found it slightly sweet and pungent, varying at different hours of the day, as in other instances. We would further observe, that the very frequent and wide alterations in the opinion of the ingenious author last mentioned, in his progress through the Botanical Magazine, as to the species of *Narcissus* and their synonyms, may excuse some mistakes or uncertainties in Linnæus, who had not a tenth part of the same advantages.

11. *N. triandrus*. Reflexed Narcissus. Linn. Sp. Pl. 416. Willd. n. 7. Ait. n. 10. Curt. Mag. t. 48. (*N. cernuus*; Salisb. n. 11. *N. juncifolius reflexus*, flore albo; Ger. em. 128.)

β. Curt. Mag. t. 1262. (*N. calathinus*; Redout. Liliac. t. 177, excluding the synonyms.)—Sheath with two or three pendulous flowers. Cup of the nectary bell-shaped,

crenate, half the length of the reflexed petals. Three stamens much the longest. Style somewhat protruding.—Native of Portugal, and the Pyrenean mountains; rare in gardens, though hardy, flowering in March and April. The flowers are inodorous, usually white or cream-coloured; in the variety β straw-coloured; pendulous, scarcely bigger than those of *minor*; their cup of a much greater diameter than the tube of the nectary, its edge very slightly crenate; petals lanceolate, reflexed. Leaves spreading, narrow. Stalk round. This species is not in the herbarium of Linnæus, but is doubtless what he intended, though he has confused its synonyms.

12. *N. odoratus*. Sweet Yellow Narcissus. Broad-leaved, or Great, Jonquil. Linn. Sp. Pl. 416. Willd. n. 10. Ait. n. 12. Curt. Mag. t. 78. Redout. Liliac. t. 157. (*N. calathinus*; Linn. Sp. Pl. 415? Curt. Mag. t. 934. *N. conspicuus*; Salisb. n. 14. *N. lætus*; Salisb. n. 15. Ait. n. 13. *N. trilobus*; Linn. Sp. Pl. 417. *N. juncifolius*, amplo calyce; Ger. em. 128.)—Sheath with about two flowers. Cup of the nectary half the length of the ovate petals, bell-shaped, with six shallow, rounded, equal segments. Leaves semicylindrical, channelled. Stem round.—Native of the south of Europe, long cultivated in our gardens, where it is very popular, especially in the country, flowering in April and May. The leaves are semicylindrical, narrower than some of the first-described, grass-green. Flowers of a golden yellow, highly fragrant, about as broad as the *N. poeticus*; their cup is sometimes darker than the petals, but rarely, and the edges of its segments are now and then crisped. We cannot make more than varieties of the *odoratus* and *lætus* of Hort. Kew. and the *trilobus*, faultily described by Linnæus, is certainly the same thing. Gerard, or his editor, wrongly speaks of the flower as white. Clusius, whose cut they use, says it is yellow, the cup somewhat darker than the petals. Mr. Curtis mentions a double variety, as often used for forcing.

13. *N. nutans*. Nodding Jonquil. Haworth Misc. 179. Ait. n. 14. (*N. trilobus*; Curt. Mag. t. 945. *N. angustifolius pallidus*, calyce flavo; Rudb. Elyf. v. 2. 61. f. 3.)—Sheath with two or three drooping flowers. Cup of the nectary not half the length of the spreading ovate petals, bell-shaped, abrupt, slightly notched, shorter than the style. Leaves channelled.—Native of the south of Europe, cultivated here in 1789 by Mr. Whitley. It is hardy, flowering in April and May. This is, as Mr. Ker remarks, intermediate between the preceding and the following species, most akin perhaps to the latter, of which we should, but for the above authorities, be inclined to make it a variety. The petals are paler, and cup deeper; the style remarkably prominent, but this might arise from the only specimen we have seen described having been perhaps more perfect in that organ, than is usual in plants whose bulbs are so prolific.

14. *N. Jonquilla*. Rush-leaved Jonquil. Linn. Sp. Pl. 417. Willd. n. 16. Ait. n. 16. Curt. Mag. t. 15. Redout. Liliac. t. 159. (*N. juncifolius præcox* et *serotinus*; Ger. em. 127.)—Sheath many-flowered. Cup of the nectary bell-shaped, very short, crenate. Leaves awl-shaped, slightly channelled above. This favourite species, so generally cultivated, in a single or double state, for the sake of its rich and powerful sweetness, is said to be a native of Spain. Its narrow rushy leaves at once distinguish it from all the foregoing, though they are not much more narrow than those of the last. The flowers are of a golden yellow, scarcely more than half the size of *poeticus*, whose form they most resemble, the cup being very short and crenate, and the petals elliptical, spreading widely, their sides

some-



somewhat deflexed. The number of *flowers* is from three to six, and they droop in some degree, though less than in the last species. A quantity of these *flowers* in a close room, especially in the evening, is to many people intolerably oppressive.

15. *N. ferotinus*. Autumnal White Narcissus. Linn. Sp. Pl. 417. Willd. n. 16. Clus. Hist. v. 1. 162. Desfont. Atlant. v. 1. 283. t. 82. (*N. minor ferotinus*; Ger. em. 124.)—Sheath with one or more flowers. Cup of the nectary extremely short, crenate. Petals lanceolate. Leaves flat.—Native of Spain, Italy, and Barbary. We have it from M. Desfontaines, who most unaccountably speaks of it as a variety of *N. Tazzetta* hereafter described, from which surely no species can be more distinct. The *leaves* are in breadth most like those of *Jonquilla*, but flat. Whole plant very slender in all its parts. *Stalk* round. *Flowers* from one to seven, with a very slender tube, six white, lanceolate, long, and narrow *petals*, and an extremely small and short yellow *cup*, beyond whose wavy edge three of the *anthers* project. We have never heard of this plant in the gardens of Britain.

16. *N. Tazzetta*. Polyanthus Narcissus. Linn. Sp. Pl. 416. Willd. n. 13. Ait. n. 15. Redout. Liliac. t. 17. Curt. Mag. t. 925. Fl. Græc. Sibth. t. 308, unpublished. (*N. orientalis* β; Curt. Mag. t. 1026. *N. medio luteus*, copioso flore, odore gravi; Rudb. Elyf. v. 2. 57. f. 11. *N. medio luteus polyanthus*; Ger. em. 124. *N. pifanus*; ibid. 125.)

β. *N. orientalis*; Ait. n. 11. Curt. Mag. t. 946, 1011, 1298, 940?

γ. *N. italicus*; Curt. Mag. t. 1188. (*N. orientalis* β; Curt. Mag. t. 948?)

δ. *N. papyraceus*; Curt. Mag. t. 947. (*N. totus albus*; Ger. em. 126.)

Sheath with very numerous flowers. Cup of the nectary bell-shaped, plaited, abrupt, one-third the length of the elliptical petals. Leaves nearly flat.—Native of the south of Europe and the Levant, as well as of the northern parts of the East Indies, and apparently of China and Japan. We have a wild specimen, gathered by Dr. Buchanan, at Nainhetty in Nepal, flowering in September. With us this is a hardy garden species, though often forced, so as to bloom in the winter or early spring. It is known by its large *bulbs*; broad, nearly flat, deep-green *leaves*, upright, two feet long; and the very numerous *flowers*, which compose a roundish umbel. The *petals* are, in a natural state, yellow, the cup of the *nectary* orange, hemispherical, its margin undulated, but scarcely notched. See the figures we have cited first. The scent is very powerful, and sometimes oppressive, though, in moderation, agreeable. This being the state in which Dr. Sibthorp found the plant in Greece, it appears to be that which Dioscorides describes "with a saffron-coloured centre," though he says the rest of the flower is white. It is probable that the state to which this species returns, if left to naturalize itself, as it were, under the south wall of some cottage garden, when the *petals* usually become cream-coloured, and the *cup* of a golden yellow, may be its original appearance. So it is most generally represented in Chinese and Japanese paintings. We have disposed under three varieties the references, chiefly to the Botanical Magazine, which indicate what we do not find sufficient materials for establishing as species. This is one of those garden flowers, which the power of cultivation has transformed into numerous, but mostly evanescent, varieties. Long and repeated experiments would be requisite to determine whether any, of those to which we have referred, constitute permanent species. The opinion of the

observing writer in the Magazine has from time to time varied respecting them. We agree with him that the *orientalis* of Linnæus, of which we have no authentic specimen, may be our *biflorus*. Whether Mr. Ker's and Mr. Aiton's *orientalis*, whose synonyms Linnæus has confounded with the former, be a good species, and which of the varieties we have noticed belong to it or to *Tazzetta*, must at present rest in great uncertainty. We presume to suspect that Mr. Ker's *bifrons*, Curt. Mag. t. 1186, 1299, is not a permanent species. We should, from observing its usual aspect, when first imported from the Dutch gardens, t. 1299, judge it a variety of *Tazzetta*; but Mr. Ker informs us, that t. 1186 is the appearance it assumes after it has been several years with us, which therefore is, probably, rather an approach to its original or natural state. Hence it seems more akin to *odoros*, which the constantly six-lobed cup confirms.

*N. dubius*, Gouan. Obs. 22. Willd. n. 14, is indeed too doubtful to be admitted upon trust, and has the signs of a variety of *Tazzetta*, at least as far as can at present be conjectured. *N. angustifolius albus minor*, Bauh. Prod. 27. Rudb. Elyf. v. 2. 61. f. 2, appears to be this plant, which is said, by Bauhin as well as Gouan, to grow wild near Montpellier. May this really be a good species, and the original of the Paper-white, or Italian, Narcissus, Curt. Mag. t. 947, which the younger Linnæus thought distinct from *Tazzetta*?

17. *N. Bulbocodium*. Hoop-petticoat Narcissus. Linn. Sp. Pl. 417. Willd. n. 15. Ait. n. 17. Curt. Mag. t. 88. Redout. Liliac. t. 24. (*N. juncifolius montanus minimus*; Ger. em. 136, also n. 7 and 8, 137. *N. minimus*, calyce campanulæ; Rudb. Elyf. v. 2. 76. f. 7.)—Sheath single-flowered. Cup of the nectary funnel-shaped, much larger than the linear petals. Stamens and style declining.—Native of Spain and Portugal; hardy in our gardens, though not common, flowering in May. The *leaves* are numerous, femicylindrical, narrow, dark green. *Stalk* round, a span high. *Flower* inodorous, of a golden yellow, very conspicuous for its large funnel-shaped *nectary*, surrounded by small *petals*, which gives it an appearance totally unlike the rest of its genus. This plant is subject to two or three variations, of which some botanists make species. See Salis. Prod. 222.

NARCISSUS, in *Gardening*, comprehends plants of the bulbous-rooted, perennial, flowering kind, of which the species cultivated are, the common daffodil (*N. pseudo-narcissus*); the poetic, or white narcissus (*N. poeticus*); the two-flowered narcissus, or pale daffodil (*N. biflorus*); the two-coloured narcissus (*N. bicolor*); the least daffodil (*N. minor*); the rush-leaved narcissus, or reflexed daffodil (*N. triandrus*); the oriental narcissus (*N. orientalis*); the hoop-petticoat narcissus (*N. bulbocodium*); the polyanthus narcissus (*N. tazetta*); the late-flowering narcissus (*N. ferotinus*); the sweet-scented narcissus, or great jonquil (*N. odoros*); the calathine yellow narcissus (*N. calathinus*); and the common jonquil (*N. jonquilla*.)

The first has varieties with white petals, and a pale yellow cup, with yellow petals, and a golden cup, with a double flower; with three or four cups within each other; Tradescant's large double; long-tubed flowered; short-tubed; dwarf-stalked; and the peerless daffodil. And many other varieties have likewise been noticed by writers.

Of the second species there are also varieties with double white flowers, with purple-cupped flowers, and with yellow-cupped flowers.

And of the third there are two or three varieties, as with sulphur-coloured flowers, and with white reflexed petals, with gold-coloured borders.

The fourth species has a large variety, which approaches, in



in its general appearance, very near to the first sort; but it is a much taller plant, and has its leaves more twisted, as well as more glaucous: the flower, but especially the nectary, is much larger, and the petals are more spreading. It is of a fine deep yellow colour, having sub-varieties with double flowers, and is a native of Spain, flowering in April. This is sometimes known by the title of great yellow *Spanish bastard daffodil*.

Of the sixth sort, there are varieties with the cup and petals wholly of a gold colour; with yellow, with a white cup; and with white, with a yellow cup.

The seventh has likewise several varieties, the principal of which are with yellow petals; with orange, yellow, or sulphur-coloured cups or nectaries; with white petals, with white cups or nectaries, and with double flowers of the different varieties. And the flower catalogues contain about a hundred sub-varieties under these heads. It may be noticed, that the varieties with white petals and white cups are not so much esteemed as the others; there are, however, two or three with large bunches of small white flowers, which are valuable for their agreeable odour, and for flowering later than most of the others. There is also one with very double flowers, the outer petals white, those in the middle some white, others orange-coloured, which has a very agreeable scent, flowers early, and is generally called the *Cyprus narcissus*, and is the most beautiful of all the varieties when blown in glasses in rooms, or other places in the house.

The eleventh species varies with double flowers.

And the thirteenth also varies with double flowers.

*Method of Culture.*—All these different species and varieties may be increased with facility, by planting the off-set bulbs from the roots; and by sowing the seed in order to procure new varieties, which is chiefly practised for the fine sorts of polyanthus narcissus. But for this last purpose, the seed should be carefully saved from the best and most curious plants, after being perfectly ripened.

With respect to sowing the seed, it should be done soon after it becomes ripe, as about the beginning of August, in shallow boxes, or flat pans, perforated with holes in the bottoms, and filled with fresh light sandy earth, being covered about a quarter of an inch deep with fine sifted mould, and placed in such situations as are only exposed to the morning sun, till the beginning of winter, when they should be removed, to have the full sun, and be sheltered from severe weather. In the spring, when the plants appear, they should be occasionally watered in dry weather, and screened from the mid-day heat, removing them into cooler situations as the warm season advances, keeping them free from all sorts of weeds. Towards the latter end of the summer, when their stems decay, the surface mould of the boxes or pans should be stirred or wholly removed, and some fresh mould sifted over the plants, being careful not to disturb the roots, and keeping them rather dry in a shaded place.

And they should have the same management annually, till the period of their leaves decaying in the third summer, when the bulbs should be taken up, and the largest separated, and planted out on raised beds of light fine mould, in rows six inches apart, and three or four distant in them, having the depth of two or three inches. The smaller bulbs may be covered in on another bed with fine mould, to remain till of sufficient size to be planted out as above. They should afterwards be kept clean; and when they show flowers, so as to ascertain their properties, they may be removed, and managed in the manner directed below.

And the off-set bulbs of the old plants, especially the

double sorts, should be separated from the roots annually, or at farthest every two or three years, in the latter part of the summer, when their leaves and stems decay; planting their larger bulbs out at different times, from the end of August to the beginning of November, in order to afford variety; but the earlier they are planted, the stronger they blow. When left out of the ground till February, or later, they mostly appear weak.

These bulbs succeed best where the soil is of a light, dry, fresh, hazel, loamy quality, and the aspect south-easterly; as, where inclined to moisture, they are very apt to be destroyed. They afterwards only require to be kept free from weeds, and to have the ground stirred above them in the autumnal season.

The small bulbs may be planted out in rows in nursery-beds to increase, for being planted in the same manner as the others.

When these roots are planted in the open borders, or other places, in assemblage with other bulbous-rooted flowers, they should be deposited in little patches, about three or four roots in each, putting them in with a blunt dibble, or holing them in with a garden trowel, three or four inches deep; in which mode they display their flowers more conspicuously than when planted singly.

And where a large quantity is planted out alone in beds, in order to exhibit a full bloom, as is often practised with the fine polyanthus-narcissus, jonquils, &c., the beds should be four feet wide, with foot-and-half or two feet wide alleys between them. In these beds the roots should be planted in rows lengthways, nine inches asunder, either with a blunt dibble or with a hoe, three or four inches deep, and six distant in each row, covering them evenly with the earth, and raking the surface smooth and even.

But in order to blow the polyanthus-narcissus and jonquil in the highest perfection, curious florists often bestow particular care in their culture; some preparing beds of compost, as for the fine hyacinths, &c. managing them in the same manner. But they succeed well in beds of light dry mould.

In cases where the bulbs of this sort are intended for sale, they should be lifted at farthest every two years, to prevent their becoming flattened by pressure, and of course less valuable.

The bulbs may be retained out of the ground two or three months, where it is necessary; but it is better to replant them in the above manner.

*Method of Culture in Glasses.*—It is sometimes the practice to cultivate the polyanthus-narcissus, and some of the large jonquil kind, in glasses in rooms, in order to blow in the winter or early spring season. For this purpose, dry firm bulbs should be chosen, and one placed in each single glass or bottle provided for the purpose, any time from October till the spring, being then filled up to the roots of the bulbs with soft water, and deposited in a light warm place. In this method the plants soon begin to grow, and send forth flower-stems, affording good flowers, which have a very ornamental appearance. The principal circumstances to be regarded in this management are those of keeping the glasses well supplied with fresh portions of water, so as constantly to be up to the lower part of the roots, and changing the whole, so as to keep it always in a pure state.

And they may likewise be raised in pots filled with light sandy mould, and placed in the same situations: also in hot-houses they may be made to blow early, when kept either in pots or glasses.

Where planted out in the manner mentioned above, in the borders, clumps, and other parts of pleasure-grounds, they are



are most of them highly ornamental, producing much variety in the early spring months.

All the different principal sorts may be procured from the seedsmen in London, who import them for sale from Holland, where they are raised in large quantities for that purpose.

NARCISSUS, in *Fabulous History*, a youth of exquisite beauty, born at Thespia, a city in Bæotia, was deemed to be the son of Cephissus, a prince who gave his name to that river. According to the fable, he was enamoured with his own figure, which he saw in a well, and contemplating it for a long time, without perceiving that he saw merely his own shadow, he pined away with love and desire. Thus Ovid relates the fable. But Pausanias, rejecting this account as incredible, refers to another tradition, according to which Narcissus had a twin-sister, who perfectly resembled him, and with whom he fell in love; but having had the misfortune to lose her, while they were hunting together, he abandoned himself to melancholy, and frequented the bank of a fountain, whose water served as a mirror to reflect his own figure, which, resembling that of his sister, gave him some consolation. The flowers called narcissuses, however, are said to be more ancient than this adventure; and the origin of their name is reported to have been as follows: The daughter of Ceres was gathering flowers in a meadow, when she was ravished by Pluto; and the flowers she was gathering, and which Pluto used for seducing her, were narcissuses and not violets. It is said that the manner of Narcissus's death has no other foundation besides his name, which is derived from a Greek word that signifies "to be benumbed," or "without sensation;" whence soporific drugs have been called "narcotics." Narcissus, it is added, having manifested only disdain of all persons who conceived an affection for him, *Love* himself is said to have taken vengeance upon him for his indifference, by causing him to be in love with himself; and Ovid, who always inclines to the marvellous, has considered this story in a light that best answered that end. After this adventure, the Thespians are said to have honoured *love* with a particular worship. Ovid adds, that as this youth was destined to have merely phantoms for the objects of his passions, and of those which he inspired, the nymph "Echo" fell in love with him, and that his disdain obliged her to retire into caves and rocks, where she retained nothing but the voice.

NARCONDAM, in *Geography*, an island in the East Indian sea, about 20 miles in circumference. It is a mere barren rock, without vegetation, and without inhabitants; 75 miles E. from the great Andaman. N. lat. 13° 23'. E. long. 94° 40'.

NARCOS, in *Ichthyology*, a name given by Joannes Cuba, and other writers, to the *torpedo*, or cramp-fish; a species of raia, distinguished by Artdi by the name of the *raia tota levis*, the wholly smooth raia. See *TORPEDO*.

NARCOSIS, in *Medicine*, a stupefaction or insensible state, whether brought on by medicines, or happening from natural causes.

NARCOTIC PRINCIPLE, in *Chemistry*, a peculiar vegetable substance obtained from several plants, such as the lettuce, the poppy, and other vegetables, to which they are said to owe their narcotic and stupefying qualities. It appears to be obtained in the largest quantity from the *papaver album*, "white poppy." The following is the process for procuring the above substance, given by Dérofine in the *Ann. de Chim.* vol. xiv. p. 263, to whom we owe its discovery.

Evaporate the aqueous solution of opium to the consistence of syrup, when a gritty precipitate begins to be

formed, which is increased by dilution with water. This precipitate consists principally of resin, extract, and the narcotic principle. The extract in this process is rendered insoluble in water, by absorbing oxygen; and also nearly insoluble in alcohol. When, therefore, the latter is poured upon the above precipitate, the resin and the narcotic principle are dissolved, while the extract remains unaffected, and is separated. The solution being left to cool, the narcotic principle is deposited in crystals. These, by repeated solution and crystallization, become of a white colour, in the form of rhomboidal prisms. This substance is insoluble in cold water, but dissolves in 400 parts of boiling water, which, however, is deposited on cooling. It dissolves in 24 parts of boiling alcohol, and in 100 parts of cold. When water is added to this solution, the solution is decomposed, the narcotic principle being precipitated in the form of white powder. Ether dissolves it with heat, but it falls down on cooling. When heated alone in a retort, it melts like wax, becomes frothy, and gives out white vapours, which condense into a yellow oil. If the heat be raised, carbonat of ammonia, carbonic acid, and carburetted hydrogen gas, come over, leaving behind a coaly substance, which, when burned, affords potash. The narcotic principle dissolves in acids, but it is precipitated in the form of white powder by the alkalis. The latter also render it a little more soluble in water. The volatile oils dissolve it; but on cooling, it is deposited in the form of oils, which afterwards crystallize.

When it is subjected to the action of nitric acid, it becomes red, and is dissolved. Oxalic acid and a bitter substance are produced.

When potash is added to the aqueous solution of opium, the narcotic principle is precipitated, carrying with it a portion of the alkali.

It is the opinion of this chemist, that its solubility in water and alcohol, in the process for obtaining it, is owing to the presence of resin, and the extractive matter, by both of which it is rendered soluble.

This peculiar substance has all the properties of opium in a concentrated state. Dérofine made experiments with it upon dogs, and found it more powerful than opium. He also found that, like opium, its bad effects were counteracted by vinegar. This circumstance led him to suppose that the vinegar dissolved this substance. See *OPIMUM*.

NARCOTICS, in *Medicine*, from *ναρκαω*, *drowsiness*, or *stupor*, those drugs which occasion drowsiness or sleep; such as opium, henbane, hemlock, &c. See *OPIATE*.

NARDECK, in *Geography*, a circar of Hindoostan, in the subah of Delhi, bounded on the north by Hissar, on the east by Ballogistan, on the south by Nagore, and on the west by Moultan; a woody district, containing few towns.

NARDEN. See *NAARDEN*.

NARDI, JACOPO, in *Biography*, an eminent Italian historian, was born of a noble family at Florence in 1476. After sustaining several important offices in his native city, he was sent ambassador to the republic of Venice in 1527. Upon his return to Florence, he married a lady connected with the party adverse to the Medici family, and distinguished himself as well in councils as in arms. His opponents gaining the ascendancy, he was imprisoned, and afterwards sent into exile, being first stripped of all his property. He was one of the emigrants, who, in 1535, laid their complaints before the emperor Charles V. at Naples; but the application proving fruitless, he retired to Venice, where he employed his latter years in cultivating literature, and composing various works. He was pressed by his friends,



friends, and even by the grand duke Cosmo, to return to Florence; but it does not appear that he attended to the invitation. The time of his death is not known. He was alive in July 1555, when, in a letter, he modestly describes himself as ascending with his staff the laborious steep of the 80th year of his mispent life. Nardi wrote the history of Florence from 1494 to 1531, containing facts within his own observation; but it was not published till 1582, when it made its appearance at Lyons. It has been several times reprinted. He likewise composed the life of Antonio Giacomini Tebalducci Malespini, printed at Florence in 1597. He obtained a high reputation by a translation of Livy, first published at Venice in 1540, which is accounted one of the best versions in the Italian language. He also translated Cicero's oration for Marcellus. He cultivated Italian poetry, and composed some "Canti Carnaschialeschi," printed in collections of poems; and a comedy in verse, entitled "L'Amicizia."

NARDINI, PIETRO, the favourite disciple of Tartini. His performance on the violin was very much in the style of his master, highly polished and correct. He composed several books of solos for his instrument, in which he could not approach his master so nearly as in playing; and even in his performance there was a want of that energy and fire, in which no one of Tartini's pupils could ever come near him. He lived many years at Leghorn; but in 1770 he removed to Florence, where he was placed at the head of the grand duke's band. He died in 1794, very much lamented by his private friends, who regarded him as a man of great worth and probity.

NARDINUM UNGUENTUM, *Ointment of Spikenard*, an ointment greatly celebrated among the ancient writers in medicine. It seems to have been variously prepared, but always with a great number of aromatic ingredients, and always with spikenard for the basis.

Dioscorides says, that the malabathrum, or Indian leaf, was sometimes an ingredient in it, but that it was also sometimes made without it. It was generally, however, mixed with the oleum balanium, or amphacinum, inspissated with an addition of schœnanth; and to increase its fragrancy there were added costus, amomum, myrrh, and balm of Gilead.

The finest was accounted that which was of a thin consistence, and very fragrant smell. It was said to be attenuating and deterfive, but somewhat acrimonious; and was sometimes, for particular uses, reduced to a solid consistence with resin.

NARDO, in *Geography*, a town of Naples, in the province of Otranto, the see of a bishop, suffragan of Brindisi, but exempt from his jurisdiction; 22 miles W. of Otranto. N. lat. 40° 27'. E. long. 18°.

NARDOLE, a town of Hindoostan, in the circar of Rajamundry; 12 miles S.W. of Rajamundry.

NARDUS, in *Botany*, a name retained from the Greek and Latin writers, is said to be of Hebrew origin. But the *Nardus* of the ancients, though a grass of similar habit, is believed to be a species of *Andropogon*, remarkable for its aromatic qualities, of which however the present genus is totally destitute. Linn. Gen. 30. Schreb. 42. Willd. Sp. Pl. v. 1. 314. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 61. Ait. Hort. Kew. ed. 2. v. 1. 134. Vahl. Enum. v. 2. 396. Juss. 33. Lamarek Illustr. t. 39.—Class and order, *Triandria Monogynia*. Nat. Ord. *Gramina*, Linn. and Juss.

Gen. Ch. Cal. Perianth none. Cor. of two valves; outer lanceolate or linear, long, pointed, inclosing the inner, which is smaller, linear, and pointed. Nectary none. Stam.

Filaments three, capillary, shorter than the corolla; anthers oblong. Pist. Germen oblong; style single, thread-shaped, long, downy; stigma simple. Peric. none, except the closed corolla adhering to the seed. Seed solitary, covered, linear-oblong, pointed at each end, narrower on the upper part.

Ess. Ch. Calyx none. Corolla of two valves.

1. *N. stricta*. Mat-grass. Linn. Sp. Pl. 77. Engl. Bot. t. 290. Stenfl. Bot. t. 174. Mart. Fl. Ruft. t. 27. Hoff. Gram. Austr. v. 2. 4. t. 4. Knapp. Gram. t. 2. Cavan. Ic. v. 3. 224. t. 204. f. 2.—Spike slender, erect, the flowers all pointing one way.—Native of Europe, occurring in various parts of Britain, on sandy heaths, especially in moist or moorish spots; flowering from May or June to August. Root perennial, composed of thick, downy fibres. Stems a little incurved, about six inches in height, rigid, slightly angular, smooth. Leaves radical, thickly tufted, linear, harsh and rigid, divaricating; their base enveloped with scales externally, and crowned at the divarication with the usual stipula of grasses. Flowers in slender, terminal spikes, all pointing one way, ash-coloured; valves purplish, bearded, rough.

This grass is by no means celebrated either for its agricultural or esculent properties. Linnæus observed that it was sought after by crows for the sake of the larva of some *Tipula* which they find at the root. He asserts also that goats and horses eat it, but that cows and sheep will not touch it. From its English appellation this plant might be supposed to be very useful for the manufacture of mats or baskets, but it appears that many grasses are better calculated for such purposes, especially *Stipa tenacissima*.

2. *N. ariflata*. Awned Mat-grass. Linn. Sp. Pl. 78. (*N. incurva*; Gouan. Hort. 33. Flor. 114. Gramen junceum, nodosum, minimum, capillare; Barcl. Ic. t. 117. f. 1.)—Spike incurved. The outer valve of the corolla terminated in a bearded point.—Native of the south of Europe, about Rome, in a sandy, barren soil. Root biennial. Stems short, divided. Leaves small and setaceous, soon disappearing. Spike incurved at the end. Flowers in pairs, as in the genus *Lolium*, on very short stalks, their valves terminated by a little awn.

3. *N. ciliaris*. Fringed Mat-grass. Linn. Sp. Pl. 78. Willd. n. 4.—Spike incurved, fringed.—Native of India. Leaves flat and grassy. Flowering-stalk a span in height. Spike composed of twelve or fifteen, alternate, erect flowers, all pointing one way; their outer valve ovate-oblong, awnless, fringed along the edge with numerous rugged scales; on one side of the flower there is a short bristle. We know nothing of this species but from Linnæus's description of it, nor are we aware that it is figured any where.

*N. indica* of Linnæus and other authors is now become a new genus. (See *MICROCHLOA*.) *N. gangitis* also is removed by Dr. Smith to *Rotibollia*.

*NARDUS Rustica*, a name attributed by some authors to the asarabacca, and by others to the baccharis Monspelienensium.

NAREA, in *Geography*, a country of Africa, in the southern part of Abyssinia, formerly governed by its own princes; but having been conquered, and converted to Christianity, part of it is become subject to the Abyssinian emperor. The conquered part, however, does not extend more than about 30 or 40 leagues either way. The whole kingdom is reckoned rich and fertile, producing great plenty, and vast quantities of cattle, and carrying on a very considerable commerce with the Caffres, who convey thither abundance of gold, which they exchange for clothes, salt, and other commodities. The Nareans are allowed, by the Abyss-



Abyssinians themselves, to be the best and handfomest people in all Ethiopia, tall, stout, and well-shaped; and in their dealings, honest, wise, faithful, and undisguised. They are also brave and warlike, and have gallantly defended their country against the incursions of the wild and barbarous Gallas. The tribute they pay to the Abyssinian emperor seems to proceed rather from their loyalty than from any obligation or compulsion.

**NAREDCOTTY**, a town of Thibet; 28 miles S. of Gangotri.

**NARELLA**, a town of Hindoostan; 15 miles N.N.W. of Delhi.

**NARENDA**, a town of Hindoostan, in Agimere; 9 miles N.E. of Roopnagur.

**NARENZA**, anciently *Narenta*, a town of Dalmatia, on a river of the same name, formerly the capital of Dalmatia, and one of its principal fortresses; governed by a Roman proconsul and council, having many places under its jurisdiction. At a succeeding period, the Slavonians, under the appellation of Narentani, settled here, and molested the navigation of these parts till the year 987, when the Venetians took possession of the town; but in 1479 they became subject to the Turks. No traces of the ancient town remain; but in its vicinity is *Narenza*, so called from a river, and fortified by the Venetians, but dismantled in 1716; 36 miles N.N.W. of Ragusa. N. lat.  $43^{\circ} 34'$ . E. long.  $18^{\circ} 4'$ .

**NARENZA**, a river of Dalmatia, which rises near Mostar, and runs into the Adriatic. The adjoining territory is fertile, but thinly inhabited on account of the insalubriousness of the air, which has given occasion to the proverb, "Naretva od Boga proclata," Narenta cursed of God. The Narentine autumnal fevers are reckoned by Dr. Giuseppe Pugati, a celebrated professor of physic in the university of Padua, a species of plague.

**NARES**, in *Anatomy*, the two (right and left) cavities of the nose. The term is nearly equivalent to the English word nostril. See **NOSE**.

**NARES**, *Dr.*, in *Biography*, organist and composer to his majesty, and brother to judge Nares, was a studious and found musician, who had distinguished himself at York as an organ-player and composer of anthems, before his advancement to the chapel royal in 1758, as successor to Travers. On the death of Bernard Gates, he was likewise appointed master of the children of his majesty's chapel; and in both these capacities, his diligence in composing for the chapel, and instructing the children, to which he devoted his whole time, acquired him great respect. Besides his choral compositions, Dr. Nares published several books of lessons for the harpsichord, a royal pastoral on his majesty's nuptials, and a useful elementary treatise on singing. Dr. Nares, dying in 1783, was succeeded in the chapel royal by Dr. Arnold, and as master of the children by Dr. Ayrton.

**NARESTBAD**, in *Geography*, a town of Persia, in the province of Kerman; 120 miles E. of Kabis.

**NAREW**, a town of Poland, in the palatinate of Bielsk; 12 miles N. of Bielsk.

**NARGHIN**, a small island in the Caspian sea, near the west coast; 10 miles S.E. of Baku.

**NARGHIS**, a town of Persia, in the province of Farsistan; 100 miles S.W. of Schiras.

**NARGON**, a small island in the gulf of Finland. N. lat.  $50^{\circ} 30'$ . E. long.  $24^{\circ} 36'$ .

**NARHAI**, a town of Hindoostan, in Mewat; 35 miles N. of Cotputly.

**NARHWAL**, in *Zoology*. See **MONODON** *Monoceros*.

**NARICA**, a species of *Viverra*; which see.

**NARIFUSORIA**, a name given by authors to such medicines as were meant to be instilled into the nostrils, for disorders of the head and eyes.

**NARIGA**, in *Geography*, a town of Russia, in the government of Archangel, on the coast of the Frozen ocean, near the mouth of the Petchora; 168 miles N.E. of Mezen.

**NARIM**, a town of Russia, at the conflux of the Ob and Ket, in the government of Tobolsk, defended with palisadoes and wooden towers. The environs abound with foxes, black, white, and grey, ermines and fables; 400 miles E. of Tobolsk. N. lat.  $59^{\circ} 5'$ . E. long.  $81^{\circ} 14'$ .

**NARIMANI**, a town of Turkish Armenia, on the Batoun; 57 miles N.E. of Erzerum.

**NARINARI**, the Brazilian name of a fish of the aquila marina kind, called by the Dutch *piilstert* and *seile*.

It is very large and flat, and the figure of its body is nearly triangular, its sides or wings being very broad, and large; the head is very large, and has a furrow down its middle; the mouth is somewhat triangular, but rounded at the corners; it has no teeth; but in the place of them has a bone in the under part of its mouth in the shape of a tongue, of four fingers long, and a finger and a half broad, and a smaller bone of the same shape in the upper part; between these it crushes its prey; the body is usually a foot and a half long, and the tail four feet; its flesh is finely flavoured.

The bones of this and the like fishes' mouths, are the fossilile filiquestra.

**NARINGA**, in *Geography*, a town of Bengal; 60 miles W.N.W. of Midnapour.

**NARIPARIDURGA**, a town of Hindoostan, in the circar of Cuddapa; 22 miles W.S.W. of Cuddapa.

**NARIUM OSSA**, in *Anatomy*, the small bones which form the bridge of the nose. See **CRANIUM**.

**NARIZ**, in *Geography*, a town of Persia, in the province of Adirbeitzan; 90 miles S.S.W. of Tabris.

**NARKSALIK**, a town of West Greenland. N. lat.  $62^{\circ} 5'$ . W. long.  $48^{\circ}$ .

**NARKSARSAK**, a town of East Greenland. N. lat.  $60^{\circ} 35'$ . W. long.  $44^{\circ} 30'$ .

**NARNALLA**, a town of Hindoostan, in the country of Berar; 35 miles W.N.W. of Ellichpour. N. lat.  $21^{\circ} 25'$ . E. long.  $77^{\circ} 34'$ .

**NARNAVERAM**, a town of Hindoostan, in the Carnatic; eight miles E.N.E. of Bomrauzepollam.

**NARNI**, a town of Italy, in the duchy of Spoleto, the see of a bishop, situated on the Nera, and containing seven parish churches and twelve convents. Under the Roman republic it was called "Nequinum," from the word "nequam," a rogue, on account of the tricks of its inhabitants. It became a Roman colony in the year of Rome 452. In 1785 it was much damaged by an earthquake; 16 miles S.S.W. of Spoleto. N. lat.  $42^{\circ} 31'$ . E. long.  $12^{\circ} 34'$ .

**NARNOL**, a town of Hindoostan, in the Mewat country; 80 miles S.W. of Delhi. N. lat.  $28^{\circ} 50'$ . E. long.  $76^{\circ} 28'$ .

**NARO**, a town of Sicily, in the valley of Mazara; 11 miles E. of Girgenti. N. lat.  $37^{\circ} 24'$ . E. long.  $13^{\circ} 45'$ .

**NAROCZ**, a town of Lithuania, in the palatinate of Wilna; 48 miles E. of Wilna.

**NARODICZ**, a town of Poland, in Volhynia; 60 miles N.N.E. of Zytomiers.

**NAROLLY**, a town of Hindoostan, in Guzerat; 20 miles N.E. of Surat.

**NAROVA**, a river of Russia, which divides the two provinces.



vinces of Ingria and Esthonia. In this river are two falls, which, though pompously described by travellers, appear trivial and uninteresting to those who have seen the fall of the Rhine at Schaffhausen, of the Dahl near Gefle in Sweden, and the stupendous cataracts of Trollhætta. The breadth of the river is 200 feet, and the perpendicular height of the falls scarcely exceeds 20. The steep and chalky banks of the river, its rapid and turbid stream, and a rocky island which separates the two falls, form a rugged and picturesque scene, which is heightened by the foam and roaring of the cataract.

**NAROVITCHAT**, a town of Russia, in the government of Penza; 84 miles W. of Penza. N. lat. 53° 44'. E. long. 43° 14'.

**NARRAGANSET**. See **NARAGANSET**.

**NARRAGUAGAS BAY**, a part of the bay between Goldsborough and Machias, in Washington county and state of Maine; adjoining to it are several islands which are inhabited and which make a fine appearance. A river of the same name falls into the bay, through the town of Harrington. See **STEBEN**.

**NARRATION**, in *Oratory* and *History*, a recital, or rehearsal of a fact as it happened, or as it is supposed to have happened.

Narration is of two kinds: either *simple* and *historical*; as where the auditor or reader is supposed to hear or read of a transaction at second-hand: or *artificial* and *fabulous*; as where their imaginations are raised, and the action is, as it were, re-acted before them.

The narration, according to the writers of rhetoric, makes the second part of a just speech, or harangue; *viz.* that immediately following the exordium, or introduction.

It makes the whole of a history; abating for the occasional reflections, episodes, and digressions.

Cicero, *Orat. Part. c. 9.* requires four properties in a good narration; *viz.* perspicuity, probability, brevity, and sweetness.

The narration is rendered perspicuous, by observing the order of time, by using none but proper and known terms, with short, though full and explicit sentences, joined by proper particles, shewing their connection and dependence, and by reciting the action uninterruptedly, and with suitable transitions.

It is rendered probable by the credibility of the narrator, by the simplicity and openness of the narration, by avoiding every thing far remote from the common sense and opinion of mankind, and by a precise detail of circumstances.

It is rendered brief, by taking it up no higher than is just necessary; nor fetching it back, as that impertinent author in Horace, *Qui gemino bellum Trojanum orditur ab ovo*; and by avoiding trivial circumstances.

The orator should be careful, however, whilst he endeavours to avoid prolixity, not to run into obscurity. Accordingly Horace, apprized of this danger, says (*Art. Poet. v. 25.*) "by striving to be short, I grow obscure."

Lastly, it is rendered sweet, pleasant, or entertaining, by using smooth, numerous, and well sounding words; by arranging them so as to avoid any hiatus, or clashing; by the greatness, novelty, and unexpectedness of the things related; and by enriching it with tropes and figures; as, frequent admirations, exclamations, interrogations, expectations, suspenses, surprising even s, by grief, joy, fear, &c. See **NUMBERS**, **CADENCE**, and **TROPE**.

In pleadings at the bar, says Dr. Blair, (*Lect. on Rhetoric, &c. vol. ii.*) narration is often a very important part

of the discourse, and requires particular attention. In narration at the bar, there is a peculiar difficulty. The pleader must say nothing but what is true; and, at the same time, he must avoid saying any thing that will hurt his cause. The facts which he relates are to be the ground-work of all his future reasoning. To recount them so as to keep strictly within the bounds of truth, and yet to present them under the colour most favourable to his cause; to place, in the most striking light, every circumstance which is to his advantage, and to soften and weaken such as make against him, demand no small exertion of his skill and dexterity. He must always remember, that if he discovers much art, he defeats his own purpose, and creates a distrust of his sincerity. Quintilian very properly directs, "Effugienda, &c.; *i. e.* in this part of his discourse, the speaker must be very careful to shun every appearance of art and cunning. For there is no time at which the judge is more upon his guard, than when the pleader is relating facts. Let nothing then seem feigned; nothing anxiously concealed. Let all that is said appear to arise from the cause itself, and not to be the work of the orator."

Clearness and distinctness, probability and conciseness, are, as we have already shewn, the qualities which critics chiefly require in narration. Distinctness is particularly requisite in narration, which ought to throw light on all that follows. A fact, or a single circumstance left in obscurity, and misapprehended by the judge, may destroy the effect of all the argument and reasoning which the speaker employs. If his narration be improbable, the judge will not regard it; and if it be tedious and diffuse, he will be tired of it, and forget it. In order to produce distinctness, besides the study of the general rules of perspicuity, narration requires particular attention to ascertain clearly the names, the dates, the places, and every other material circumstance of the facts recounted. In order to be probable in narration, it is material to enter into the characters of the persons of whom we speak, and to shew that their actions proceeded from such motives as are natural and likely to gain belief. In order to be as concise as the subject will admit, it is necessary to throw out all superfluous circumstances; the rejection of which will likewise tend to make our narration more forcible and more clear. Cicero is distinguished by his talent for narration; and his orations furnish instructive examples of it. The narration, *e. g.* in the celebrated oration for Milo, has been often and justly admired.

**NARRATION**, in *Poetry*, is used more particularly for the action, or event, that makes the subject of an epic poem.

F. Bossu observes, that the actions in poetry are equally susceptible of the two kinds of oratorical narration, and that each constitutes a particular species of poetry.

Those under the artificial or active form, are now called *dramatic*. And those only related by the poet, who here personates an historian, are called *epic*.

In the drama, the narration is the whole of the piece; in the epopœa, it is only a part, though in effect it is the principal part, and the main body of the poem. It is preceded by the proposition and invocation, which Bossu calls the preludes; and is frequently interrupted by the poet's speaking in person, demanding pardon, favour, &c.

The narration includes the whole action, episodified, with all its circumstances and its ornaments.

It is in this part that the action is to be begun, carried on, and ended. It is this which is to shew the causes of all that is related: in this the difficulties are to be proposed and resolved, and the persons, both human and divine, are here to shew their interests, their manners, and their qualities,



ries, by their actions, and their discourse; and all this is to be described with the beauty, the majesty, and force of verse, style, sentiments, comparison, and other ornaments proper to the subject in general, and to each thing in particular.

The qualities of the epic narration are, that it be agreeable, probable, moving, surprising, and active.

Horace speaks of the utile and dulce as on the same footing.

Bosfu looks on the utile as an essential property; and the dulce as no more than an additional quality.

**NARRICKEE**, in *Geography*, a town of Hindoostan; 20 miles E.N.E. of Agra.

**NARROW**, in the *Manege*. A horse is said to narrow, when he does not take ground enough, or does not bear far enough out to one hand or to the other. If your horse narrows you must assist him with the inside rein, that is, you must carry your hand to the outside, and press him forward upon straight lines with the calves of your legs.

**NARROW** is also a term among bowlers. See **BOWL-ING**.

**NARROW Island**, or *Stenosa*, in *Geography*, a small and uninhabited island of the Grecian Archipelago, E. of Naxia, but near it.

**NARROWS, THE**, a narrow passage from the sea, between Long and Staten islands, into the bay which spreads before New York city; nine miles S. of it.—Also, a strait about three miles broad, between the islands of Nevis and St. Christopher in the West Indies.—Also, a strait, called “Petit Droit,” in the river St. Lawrence, in Upper Canada, between Grenadier island, and the township of Escot, now included in Yonge.

**NARRYTAMOE**, a province of Thibet, N. of Napaal.

**NARSAPOUR**, a town of Hindoostan, in the circar of Ellore, on the Godavery; 40 miles E.S.E. of Ellore.—Also, a town of Hindoostan, in the circar of Ellore; 25 miles N.W. of Ellore.—Also, a town of Hindoostan, in Golconda; 10 miles E.S.E. of Damapetta.—Also, a town of Hindoostan, in Mysore; 22 miles N. of Bangalore.

**NARSERAY**, a town of Hindoostan, in Mewat; 10 miles S. of Cotputly.

**NARSES**, in *Biography*, styled the Eunuch, a celebrated general, who was brought up in the palace of Justinian I. to those domestic feminine services in which persons of his condition are usually employed: by his insinuating talents he obtained the favour of the emperor, who gave him the posts of his chamberlain and private treasurer. He was gradually introduced into public business, and in the year 538 was placed at the head of a body of troops to assist Belisarius in Italy, who was engaged against the Ostrogoths. Some differences between him, and the general associated in the same service, led to his recall, and from this time till 552 he continued to serve the emperor in a civil capacity. At this latter period he was sent to oppose Totila with unlimited powers. He met his antagonist on the Apennines, totally defeated his army, and slew Totila. Narses marched on to Rome, and having employed himself in repairing the ruined walls of the metropolis, he pursued the Goths, defeated, and slew their general Teias, and reduced his remaining forces to obedience. The Franks and Alamani entered the north of Italy as allies to the Goths, and spread like a torrent along the coast of the Adriatic to Apulia and Calabria. Narses, at first, gave way to an inundation that he could not stop, attending chiefly to the defence of the cities. But while the invaders were melting away from the effects of im-

temperance, and an unaccustomed climate, he was employing all his resources in assembling an army and enuring it to military exercises, and in the ensuing spring he almost annihilated the barbarian army, and that with little loss on his own part. Previously to the battle, a leader of the Heruli, a people in the imperial service, had killed his servant for some trifling offence, Narses caused him instantly to be put to death; and while the Heruli were shewing marks of indignation at this exertion of authority, he called on them to march forward lest they should lose their place in the field of honour, and he was obeyed without a murmur, a circumstance that evinced his fortitude, and the confidence which he had in the troops.

Having overthrown the dominion of the Goths in Italy, he was appointed to the supreme authority of that country, a post which he occupied for fifteen years, during which he acquired the habits of avarice, and accumulated vast riches by methods which rendered his government unpopular, and excited a complaint preferred against him before the throne of Justin II. He was recalled by the empress Sophia, who insultingly desired “he would leave to *men* the exercise of arms, and resume the distaff which was fitted for the hands of an eunuch.” To this he indignantly replied, “I will spin her such a thread as she will not easily unravel,” and he invited the Lombards to that invasion of Italy which followed under Alboin. He retired to Naples, where he was visited by the pope, who persuaded him to return to Rome. He died in 567, at a very advanced age. “His death,” says Gibbon, “though in the extreme period of old age, was unseasonable and premature, since *his* genius alone could have repaired the last and fatal error of his life.” Univer. Hist. Gibbon.

**NARSINGAPATAM**, in *Geography*, a town of Hindoostan, in the country of Cattack, near the coast of the bay of Bengal; 45 miles S. of Cattack.

**NARSINGUR**, a town of Hindoostan, in Bengal; 44 miles W. of Midnapour.

**NARSYZSK**, a town of Poland, in Volhynia; 64 miles N.N.E. of Zytomiers.

**NARTHECIUM**, in *Botany*, a name used by Theophrastus for some plant with a reed-like stem, and derived from *ναρθέξ*, *ferula*. Hudson and other authors have applied it to the present genus from a similar idea. Jussieu and Michaux include the *TOFIELDIA* of the *Flora Britannica* under *NARTHECIUM*; but as that genus is furnished with a calyx, and has three stigmas, we venture to keep them separate.—Huds. Fl. Angl. ed. 2. 145. Sm. Fl. Brit. 368. Mæhring. Gort. —Class and order, *Hexandria Monogynia*. Nat. Ord. *Coronarie*, Linn. *Junci*, Juss.

Gen. Ch. *Cal.* Perianth none. *Cor.* Petals six, inferior, equal, lanceolate, acute, rather erect, permanent. *Stam.* Filaments six, awl-shaped, woolly; anthers small, incumbent. *Pist.* Germen superior, triangular; style none; stigma obtuse. *Peric.* Capsule ovate, acute, triangular, of three cells and three valves. *Seeds* numerous, chaffy at each end.

Eff. Ch. Calyx none. Petals six, spreading, permanent. Stamens thread-shaped, hairy. Capsule superior, prismatic. Seeds with an appendage at each end.

1. *N. officragum*. Lancashire Asphodel. Sm. Fl. Brit. 368. Huds. 145. With. 339. Engl. Bot. t. 535. (*Anthericum officragum*; Linn. Sp. Pl. 446. Fl. Dan. t. 42. *Asphodelus Lancastrie*; Ger. em. 95.)—Cluster continued, simple. Stalks smooth.—Found on black turfy bogs in the north and eastern parts of England, flowering in July and August.—*Root* perennial, fibrous, somewhat creeping, as in the genus *Iris*. *Stems* six or eight inches in height, ascending, simple, round, smooth, rather wavy, almost



almost naked. *Radical leaves* equitant, sword-shaped, nerved; those of the stem alternate, short, carinated. *Cluster* terminal, erect, many-flowered; stalks alternate, erect, single-flowered, angulated, furnished with *bractæas*. *Petals* yellow, greenish on the outside. *Capsule* tawny, polished, rigid.

2. *N. glutinosum*. American *Narthecium*.—Michaux Boreal-Amer. v. 1. 210. Sims in Bot. Mag. t. 1505.—Cluster interrupted, fasciculated.—Native of North America, from Quebec to lake Mistassin. It blossoms in July and August. Very similar in habit to the last.—*Root* perennial. *Stem* (according to Michaux) rough and glutinous, (though no traces of such characters were to be found in the specimen figured by Dr. Sims) round, strict, simple, glaucous. *Radical leaves* seven or eight in a bundle, sword-shaped; those of the stem very few, alternate. *Cluster* terminal, diffuse, many-flowered. *Flowers* pale yellow; the pubescence of the filaments very short.

NARVA, in *Geography*, a sea-port town of Russia, which, together with its suburbs, is situated, according to a geographical division, partly in Ingria, and partly in Esthonia; as the river Narova divides these two provinces; but in the division of governments established by the late empress, is comprised in Ingria, or the government of St. Petersburg. Narva, supposed to have been built in 1224, stands on the Narova, nearly 100 miles from Petersburg, 24 from the point where that river issues from the lake Peipus, and eight miles from its mouth, where it falls into the gulf of Finland. The houses are built of brick stuccoed white, and it has more the appearance of a German than of a Russian town. In the suburbs, called Ivangorod, the colossal remains of an ancient fortress, built by Ivan Vassilievitch the Great, impending in a picturesque manner over the steep banks of the Narova. The principal exports are hemp, flax, timber, and corn; the imports are salt, tobacco, wine, salted herrings, spices, tea, sugar, and other grocery wares. The commodities which go to Narva along the Narova are obliged, on account of the falls of that river (see NAROVA), to be carried a great way by land. Near Narva is the spot celebrated for the victory which Charles XII., in the 19th year of his age, gained over the Russian army, A.D. 1700. On that memorable day Charles headed at least 9000 men, and the Russians did not exceed 32,000. Six thousand Russians, including those that were drowned in attempting to pass the Narova, fell in this engagement; but the consequences were still more fatal to the Russian arms, as the whole artillery was lost, and the greater part of the infantry surrendered to the conqueror. The number of prisoners was so great, that the officers were only detained; the rest were driven, like a flock of sheep, to the distance of a league from Narva, and dismissed. N. lat. 59° 16'. E. long. 28° 3'.

NARUNGPOUR, a town of Hindoostan, in Allahabad, on the Ganges; 17 miles E. of Gazypour.

NARWA, a town and fortress of Hindoostan, in the country of Agra, on the Sinde; 98 miles S. of Agra. N. lat. 25° 40'. E. long. 78° 18'.

NARWAL, a name given to a fish of the whale kind, more frequently called the sea-unicorn. See MONODON *Monoceros*.

NARWUR, in *Geography*, a town of Hindoostan, in Guzerat; 21 miles S. of Darempour.

NAS, a town of Sweden, in the province of Upland; 21 miles S. of Upsal.—Also, a town of Norway, in the province of Aggerhuus; 60 miles N. of Christiania.

NASACARA, a town of Japan, in the island of Ximo; 15 miles E. of Kokara.

NASADKA, a town of Russia, in the government of Perm; 16 miles S.E. of Perma.

NASAGAR, a town of Hindoostan, in Lahore; 56 miles S.E. of Nagercote.

NASAL, something belonging to the nose, *nasus*. As, the nose-piece of a helmet, anciently called the *nasale*.

NASAL, in *Grammar*, &c. is applied to those sounds, or letters, in whose formation the nose is the principal organ; and particularly where the sound formed is passed through the nose.

In most English words, the sounds expressed by the characters *an, en, in, on, un*, are simple sounds, and proper nasal vowels. See M, N, &c.

NASAL *Duct, Obstruction of*, in *Surgery*. See FISTULA *Lachrymalis*.

NASAL *Polypi*. See POLYPUS.

NASALIA, in *Medicine*, a sort of remedies to be taken by the nose; called also *errhines*.

NASALIS *Labii Superioris*, in *Anatomy*, a name given by Albinus to a few fibres of the orbicularis oris. See the description of that muscle in the article DEGLUTITION.

NASAMMONITES, in *Natural History*, a name given by the ancients to a stone, which Pliny describes to have been of a blood-colour variegated with veins of black. We know no stone which answers to this character at present, unless it be some of the agates, in a variegated state.

NASAMONES, in *Ancient Geography*, a numerous people of Africa, who inhabited a part of *Cyrenaica*, which see. According to Pliny, Silius, and Lucan, the Pfylli and Nasamones must have been seated near the greater Syrtis, or behind the Regio Syrtica and Cyrenaica, if we adopt Strabo's opinion. The Pfylli, as Herodotus informs us, having once had all their reservoirs of water dried up by the south wind, advanced into the Sahara, in order to make war upon that wind; but as it blew with extreme violence, they were overwhelmed with torrents of sand, and all perished. After this tragical event, their neighbours, the Nasamones, annexed the territories which they possessed to their own dominions. Herodotus represents the Nasamones as a powerful nation in his time, and remarkable for some singular customs then prevalent amongst them. During the summer season, they left their cattle on the coast, and dispersed themselves over the plains of *Ægila* or *Augila*, in order to gather the fruit of the palm-trees, or dates, with which this place abounded. Here likewise they found an immense quantity of grasshoppers, which, being dried in the sun, they pulverized, and infused into milk. The liquor composed of these two ingredients was highly esteemed by them, as a most pleasant beverage. They had many wives, whom they used in public, like the Massagetæ, after having erected a staff for a mark. The bride amongst them lay the first night with all the guests invited to the wedding; and received from each of them the next morning a present, which he had brought with him for that purpose. When they took an oath, they laid their hands on the sepulchres of those who had been generally esteemed the most just and excellent persons amongst them. At their divinations, they went to the tombs of their ancestors, where, after certain prayers, they fell asleep, and grounded their predictions on the dreams that then occurred to them. They pledged their faith to each other by mutually presenting a cup of liquor. When they had no liquid, the parties took up dust from the ground, which they put into their mouths. According to some authors, the Nasamones were regarded by the ancients as no better than a numerous gang of banditti; as they made frequent incursions upon the territories of their neighbours, which they plundered and ravaged in a barbarous manner. A people of the same name, as we learn from Philostratus, inhabited part of Ethiopia.

NASARD, a stop in the large cathedral organs of France,



an octave above the 12th. The pipes are of metal, with a funnel or chimney at the top.

**NASAS**, in *Geography*, a river of North America, in New Biscay, which joins the Saucedo in N. lat.  $25^{\circ} 10'$ . W. long.  $102^{\circ} 31'$ ; forming with it the Rio Palmas, which runs into the gulf of Mexico, N. lat.  $25^{\circ}$ . W. long.  $98^{\circ} 46'$ .

**NASBINELS**, a town of France, in the department of the Lozère, and chief place of a canton, in the district of Marvejols; 12 miles N.W. of it. The place contains 1571, and the canton 5593 inhabitants, on a territory of  $177\frac{1}{2}$  kilometres, in five communes.

**NASBY**, a town of Sweden, in Nericia; 12 miles N. of Orebro.

**NASCA**, a sea-port of Peru, in the archbishopric of Lima, and jurisdiction of Ica, Pisco, and Nasca; the territory of which is fertile in wine and sugar, and the harbour good; but the town is in a state of decay; 190 miles S.E. of Lima. S. lat.  $14^{\circ} 48'$ . W. long.  $75^{\circ} 6'$ .—Also, a river of Peru, which runs into the Pacific ocean, S. lat.  $14^{\circ} 42'$ .

**NASCALE**, a sort of peffary, made of wool, cotton, or the like, and introduced into the vagina, after being impregnated with proper ingredients.

**NASCARO**, in *Geography*, a river of Naples, which runs into the gulf of Squillace, N. lat.  $38^{\circ} 58'$ . E. long.  $17^{\circ} 5'$ .

**NASCIMENTO**, a small island in the Indian sea, near the S.W. coast of Madagascar. S. lat.  $25^{\circ} 15'$ . E. long.  $42^{\circ} 6'$ .

**NASE**, a town of Norway, in the province of Aggerhuts; 96 miles N. of Christiania.—Also, a river of North America, which runs into the Mississippi, N. lat.  $37^{\circ} 20'$ . W. long.  $90^{\circ} 12'$ .

**NASEBERRY TREE**, in *Botany*. See **CHRYSOPHYLLUM**.

**NASEBY**, or **NAVESBY**, in *Geography*, a village in the hundred of Guilsborough, and county of Northampton, England, stands on an eminence which is supposed to be the highest ground in the kingdom. Though small, it is, on many accounts, interesting to the traveller, and will ever be conspicuous on the page of history. Its geological features naturally attract the attention of the philosopher; and the political importance connected with the military scenes displayed in its vicinity, peculiarly entitle it to topographical notice. Six springs rise within the parish, the waters issuing from which are collected in reservoirs, and form valuable ponds. The lesser or upper Avon derives its source from one of these springs; the Nen from another; and the rise of the Welland has been referred to Naseby field. The parish consists mostly of open fields, and is nearly twenty miles in circumference. Naseby was formerly a market town; the inhabitants having obtained a charter in the fifth year of king John. The "mercate-cross" is still standing. A considerable manufacture of worsted stuffs, harrateens, and tammys was carried on here; but has greatly declined through the immense increase of the cotton trade, and the prevalence of muslins and calicoes. By the return to parliament under the recent population act of 1811, the number of houses is stated to be 120, which are inhabited by 598 persons.

Adjacent to this village, on Naseby field, occurred the memorable battle between the royal and parliamentary forces, June 14, 1645, which proved so fatal to the royal cause, and in which, according to lord Clarendon, both king and kingdom were lost. The armies were nearly equal in number, and the royalists had peculiar advantages, if they had skilfully employed them. But they imprudently made a forced march of four miles, and attacked the enemy in a

lofty, commanding situation, before their own cannon arrived. After a conflict for three hours the royal army was defeated, and about five thousand were killed or taken. The king's cabinet of letters, containing the private ones, which passed between him and the queen, fell into the hands of the conquerors, who pursuing the routed royalists, cruelly massacred above an hundred women, some of whom were the wives of officers of great quality. See Nichols's History and Antiquities of Leicestershire. Martin's History of Naseby, 8vo. Beauties of England and Wales, vol. ix. and vol. xi. by J. Britton.

**NASEWITZ**, a town of Prussia, in the palatinate of Culm; eight miles N.E. of Bischofswerder.

**NASH**, a country of Halifax district, in North Carolina, containing 6975 inhabitants, of whom 2596 are slaves. In this country there is a large and valuable body of iron ore.

**NASH Point**, a cape in the British channel, on the S. coast of Wales, and county of Glamorgan. N. lat.  $51^{\circ} 23'$ . W. long.  $4^{\circ} 30'$ .

**NASHAUN**, or **NEWSHAUN**, one of the Elizabeth islands, at the mouth of Buzzard's bay, and three miles from the extremity of the peninsula of Barnstable county in America. This island supports a considerable number of sheep and cattle; and is famous for its wool and cheese.

**NASHUA**, a considerable river of Worcester county, in the Massachusetts, which enters Merrimack river at Dunstable.

**NASHVILLE**, a post-town of Mero district in Tennessee, pleasantly situated in Davidson county, on the S. bank of Cumberland river, where it is 200 yards broad. It is regularly laid out, and contains 345 inhabitants, a court-house, gaol, an academy liberally endowed, a church for Presbyterians, and one for Methodists. It is the seat of the courts held every half-year for the district of Mero, and of the courts of pleas and quarter sessions for Davidson county; 185 miles W. of Knoxville. N. lat.  $35^{\circ} 45'$ . W. long.  $87^{\circ} 8'$ .

**NASHWARTISH**, a river of New Brunswick, which runs into the St. John, N. lat.  $46^{\circ} 4'$ . W. long.  $66^{\circ} 46'$ .

**NASI OSSA**, or *Nasalia ossa*, in *Anatomy*, the bones of the nose. See **CRANIUM**.

**NASI**, or *Narium constrictor*, a muscle of the nose. See **NOSE**.

*Nasi Ossa, Fractures of*, in *Surgery*. See **FRACTURE**.

**NASILON**, in *Geography*, a town of Lithuania, in the palatinate of Wilna; 50 miles S.E. of Wilna.

**NASIMA**, a town of Japan, on the S.E. coast of Nippon. N. lat.  $34^{\circ} 26'$ . E. long.  $134^{\circ} 8'$ .—Also, a small island of Japan, in the strait between Nippon and Xicoco.

**NASINO**, a town of Japan, in the island of Nippon; 70 miles N. of Jedo.

**NASITAS**, a word used by some authors to express a speaking through the nose.

**NASKEAG POINT**, in *Geography*, a cape of Hancock county in the state of Maine, being the eastern point of Penobscot bay, in the town of Sedgwick.

**NASKOW**, a town of Denmark, on the W. coast of the island of Laland, of which it is the capital; anciently well fortified, but now only encompassed with a wall. The town is of a middling size, and handsomely built; the inhabitants are wealthy, and carry on a considerable trade in the produce of the country, which is fertile. The Jews are allowed the exercise of their worship, and have a synagogue. In the town are an hospital and a grammar-school, both well endowed. The harbour is tolerably good. N. lat.  $54^{\circ} 51'$ . E. long.  $11^{\circ} 5'$ .

**NASO**, a town of Sicily, in the valley of Demona; nine miles W. of Patti.



*Naso-palatini ductus*, in *Anatomy*, the foramina incisiva of the upper jaw-bones. See CRANIUM.

NASOW, in *Geography*, a town of Pomerania; eight miles N.E. of Corling.

NASRA. See NAZARETH.

NASSAFI, in *Biography*, a celebrated Mussulman doctor, was born in the year of the Hegira 461, at the city of Nefkcheb, which was in that part of the Persian territories which lies beyond the river Gihon, anciently called the Oxus. He was one of the most eminent of the sect of Hanifites, or followers of Abou-Hanifah, who is venerated as the principal Imam or chief of one of the four orthodox sects among the Mahometans. He obtained great celebrity, and among other distinguishing titles, that of "Sovereign doctor of Genii and Men." He died at Samarcand in the year 537 of the Hegira, deeply regretted by an immense number of disciples, who respected him equally on account of his learning and piety. To him are attributed nearly an hundred treatises on the Mussulman law and traditions, in which he is said to have condensed the excellencies of 550 preceding writers.

NASSAFI, another celebrated Mussulman doctor of the same country with the preceding, but who flourished at a much later period. The soundness of his doctrine, and the exemplariness of his piety, are highly commended; and his writings on law and religion are held in much esteem. He died at Bagdat in the year 710 of the Hegira, and was author of many books, among which is a "Commentary" on the five books of the Mussulman law.

NASSARRE, PABLO DE ZARAGOÇA, an ecclesiastic and organist of the royal convent in that city, author of a treatise on music in Spanish, entitled "Fragmentos Musicos," in four parts, or distinct treatises; in which are contained the general rules necessary for canto fermo, characters for time, in measured music, counterpoint, and composition. Madrid, 4to. 1700.

The work is written in dialogue: the questions are pertinent, and the answers succinct and clear.

In the first dialogue on canto fermo, examples are given, in Gregorian notes, of all the eight modes of the church.

In the second dialogue, the clefs, characters for time, and their proportions in canto figurato, or measured music, are explained; in which the old time-table is united with the new, from the maxima to the semi-quaver. A considerable part of this section is now useless in practice, unless in deciphering very old music.

In the third dialogue, the technical terms used in counterpoint are defined, and its rules explained. In this part of the work the author's knowledge of the history of counterpoint appears to be very superficial. He quotes Bacchius Senior in his definition. All his examples are written on canto fermo on four lines. But this section advances no further in composition than plain counterpoint, and the use of concords.

In the fourth dialogue, however, the use of discords, passing-notes, and ligatures, or binding-notes, is amply treated, and numerous short examples of fugue on simple subjects are given; but none of canon or double counterpoint. The passages are all ecclesiastical, and much more ancient than the date of the book.

NASSAU, in *Geography*, a town of Germany, in the county of Nassau Dietz, seated on the Lahn, in which is a church used in common both by Lutherans and Calvinists. Opposite to it, on the other side of a river, on a high mountain, formerly stood Nassauberg, a very ancient place, the original house of the Nassau family, now a fief of Treves; 22 miles N.W. of Mentz. N. lat. 50° 17'. E. long. 7° 55'.

NASSAU, a principality of Germany, situated in the Wetterau, about 48 miles long, and 28 broad, generally woody and mountainous, and yet containing fine arable and meadow lands. The founder of the present princes of Nassau was count Henry I., surnamed the Wealthy, who bequeathed to his two sons, Walram and Otho I., the whole county of Nassau, with all its lands. In the year 1255, they agreed to hold the patrimonial house and prefecture of Nassau in community; but to divide the other part of the county. Weilburg, Wilbaden, and Idstein, became Walram's part; and Otho I. had Siegen, Dillenburg, Herborn, Beilstein, Hadamar, and Ems. The present reigning princes are Nassau Weilburg, Nassau Dillenburg, and Nassau Saarbruck Usingen. All the branches are named from the principal towns in the several districts.

NASSAU-Dietz, a county of Germany, situated on the Lahn, in the circle of the Upper Rhine according to Busching, but in the kingdom of Westphalia according to Berenger; formerly a fief of Treves. It constitutes a part of the style of the landgraves of Hesse, but what interest they will have in it is as yet undetermined. The capital is Dietz.

NASSAU, a small town of America, in Dauphin county, Pennsylvania; containing a German church, and about 35 houses; called also "Kempstown."—Also, a river on the coast of East Florida, which runs into the sea, N. lat. 30° 44'. W. long. 81° 42'.—Also, an island in the East Indian ocean, situated W. of Sumatra; about 50 miles in circumference. This island and "Poggy" are sometimes called Nassau islands, and sometimes Poggy islands. The inhabitants are all tattooed. S. lat. 3°. W. long. 100°.—Also, a sea-port town of Providence, one of the Bahama islands.—Also, a town of Germany, in the county of Hohenloe; four miles N. of Wieckerheim.—Also, a mountain of the island of Jamaica; 50 miles W.N.W. of Kingston.—Also, a small island at the mouth of Byram river, in Long island Sound.—Also, a large bay, called "Spirito Santo," on the coast of West Florida, about 70 miles from N. to S., in which are several islands, the most northerly of which is Myrtle island. N. lat. 27° 45' to 28° 10'. W. long. 82° 35' to 83°.—Also, a large and open bay on the S. coast of Terra del Fuego island; E. of False Cape Horn, which forms the western limit of the bay; it is well sheltered from the tempests of the ocean, and capable of holding a fleet of ships. S. lat. 55° 38'.—Also, a cape on the coast of Surinam, or N.E. of South America, N.N.W. of Essequibo gulf, and the E. point of the entrance into the river Pumarón. N. lat. 7° 40'. W. long. 59° 30'.—Also, a cape on the N. shore of Terra Firma, in South America.—Also, a road on the coast of West Florida, W. of Mobile bay, N. of Ship island, and within the N. end of the Chandeurs or Myrtle islands. This is one of the best roads, most easy of access, and the best sheltered, for large vessels on the whole coast of Florida. This road was first discovered by Dr. Daniel Cox of New Jersey, who called it by its name in honour of the reigning prince, William III.

NASSAUVIA, in *Botany*, so named by Commerçon, in compliment to "the Prince of Nassau," who is said to have been the companion of his herborizing excursions about the straits of Magellan. The specific name given by him seems designed to combine the two ideas, of eminence in the person commemorated, and of the corymbiferous habit of the plant. Juss. 175 Willd. Sp. Pl. v. 3. 2396. Lamarck Dict. v. 4. 432. Illustr. t. 721. Class and order, *Syngensia Polygamia-segregata*. Nat. Ord. *Compositæ*, Linn. *Cinarocephalæ*, Juss.

Gen. Ch. *Common Calyx* of several oblong, pungent, horizontal leaves, surrounding a cylindrical *common receptacle*, and



and separating the tufts of flowers; *perianth* double; the outermost of three linear-lanceolate leaves; inner of five larger ones; all rather spinous pointed. *Cor.* compound, tubular; *florets* four or five, equal, perfect, uniform; their limb two-lipped; the upper with three teeth, erect; lower with two, reflexed. *Stam.* Filaments five, capillary; anthers cohering, acute, about equal to the limb. *Pist.* Germen oblong, somewhat quadrangular, compressed; style thread-shaped; stigmas linear, divaricated. *Peric.* none, except the permanent calyx. *Seed* the figure of the germen; down of four or five soft, white, deciduous bristles, scarcely extending beyond the calyx. *Recept.* small, naked.

*Eff. Ch.* Flowers in an oblong head, with sharp scales interperfed. Calyx four or five-flowered, double; the outer of three leaves, inner of five. Florets tubular, two-lipped. Down bristly, deciduous. Receptacle naked.

1. *N. suaveolens.* Willd. (*N. coryphiza*; Commerfon MSS.)—Native of the straits of Magellan; communicated by Jussieu and Thoun, from Commerfon's herbarium. The root appears to be perennial. *Stems* decumbent at the base, then erect, a span high, leafy, with a few short lateral branches. *Leaves* sessile, ovate, acute, ribbed, smooth, crowded, deeply toothed, or almost pinnatifid, in their upper part. *Flowers* terminating the main stem, in a dense, oblong, downy head, whose outer scales are broadest, all of them being entire and single-ribbed, in which characters, and their downiness, they differ from the foliage. The whole plant has much of the aspect of a *Tussilago*, or Butterbur, in its flowers, but the foliage is totally dissimilar, both in form, size, and situation, to every species of that genus, as is likewise the *fructification*.

This herb is said to be delightfully fragrant; but nothing of that kind is perceptible in our dried specimens. We prefer the specific name of Willdenow, alluding to this circumstance, because Commerfon's, though older, was never printed.

NASSIA, in *Geography*, a town of Sweden, in the province of Smaland; 18 miles S.S.E. of Jonkioping.

NASSIRABAD, a town of Hindoostan, in Oude; 25 miles N. of Munickpour.

NASSIR-EDDIN, in *Biography*, a very celebrated philosopher, astronomer, and various writer among the Mahometans. He was born in the year 597 of the Hegira. He cultivated literature and the sciences with great success, and was characterised as "the doctor who had acquired the highest reputation in all branches of knowledge." He is frequently called, by way of eminence, "The Master." The emperor of the Moguls, Holagou, placed him at the head of all the philosophers and astronomers whom he had given directions for sparing, amidst the wars of depredation which he carried on against the Mahometans; and he created him director, or superintendant of the revenues of all the colleges in the cities of which he was master. He afterwards assigned him the city of Marayah, and commanded him to prepare those astronomical tables, which were entitled the "Imperial," and which have come down to our times. Nassir-Eddin also published the most esteemed Mahometan editions, with commentaries, of Euclid's "Elements," and the "Spherics" of Theodosius and Menelaus. He was author of "A Treatise on Moral Subjects," and other pieces.

NASSITZA, in *Geography*, a town of Slavonia; 17 miles N. of Brod.

NASSOGNE, a town of France, in the department of the Sambre and Meuse, and chief place of a canton, in the district of St. Hubert. The place contains 801, and the

canton 3375 inhabitants, on a territory of 197½ kilometres, in 11 communes.

NASSUCK, a town of Hindoostan, in Guzerat; 95 miles S.S.W. of Surat. N. lat. 19° 50'. E. long. 73° 49'.

NASSURABAD, a town of Hindoostan, in Allahabad; six miles S. of Jionpour.

NAST, in *Agriculture*, a provincial term applied to any sort of foulness, as weeds in land under fallow.

NASTADT, in *Geography*, a town of Westphalia; 18 miles S. of Coblentz. S. lat. 50° 10'. E. long. 7° 48'.

NASTISTAK, an island of Russia, in the mouth of the Lena, about 80 miles in length and 20 in breadth. N. lat. 71° 44' to 72° 50'. E. long. 115° 40' to 119° 34'.

NASTOLA, a town of Sweden, in the province of Tavastland; 47 miles E. of Tavasthus.

NASTURTIUM, in *Botany*, so called, according to Pliny, book 19, chap. 8, from *nasus* the nose, because of the pungent and disagreeable smell, with which it twinges or torments that organ; the Cress, or Nose-smart. This appellation has been given to various plants, which range under different genera of the *Tetradynamia Siliculosa* of Linnæus. Tournefort however retains a genus under this name, which he distinguishes from *Thlaspi*, merely by having the leaves divided into many segments, a principle of generic definition not admissible in modern botany, though there are cases in which such a difference of habit may lead us to expect and to discover essential characters in the fructification.

NASTUS, a name borrowed by Jussieu from the ancient Greeks, whose *καλαμος νατος* however, *arundo farfa* of the Latins, is described as having a solid stem, useful for making arrows; whereas the plant of Jussieu is no other than the bamboo, or *Arundo Bambos* of Linnæus, well known to have hollow stems and branches, on which its peculiar use, for many domestic purposes, greatly depends. Hence Retzius, finding this valuable plant a distinct genus from *Arundo*, called it *Bambos*, altered by the classical Schreber, though surely most unfortunately, into *BAMBUSA*; see that article. Gmelin in his compiled *Systema*, v. 2. 579, has *Bambus*, and in the next page *Nasus*, with a strange misconception of characters, for the very same thing. We are disposed to prefer *Nasus* to *Bambusa*, though the latter has been adopted by Schreber, Willdenow, and in Hort. Kew. *Bambos*, used by Retzius and Roxburgh, is perhaps preferable to either, and Mr. Dryander has given that name his sanction in editing Dr. Roxburgh's work, though he has retained *Bambusa* in Hort. Kew. The professed plan of the second edition of this book was to follow Willdenow; and our departed friend, when he did not publish in his own name, on that account, (as he has often told us,) never cared about any choice in nomenclature, which we have often greatly lamented.—Juss. 34. Lamarck Illustr. t. 264. (Bambos; Retz. Obs. fasc. 5. 24. Bambusa; Schreb. 236. Willd. Sp. Pl. v. 2. 245. Ait. Hort. Kew. v. 2. 316.)—Class and order, *Hexandria Monogynia*. Nat. Ord. *Gramina*.

Gen. Ch. See *BAMBUSA*.

*Eff. Ch.* Calyx of several glumes. Spikelet of several flowers. Corolla of two unequal valves. Stigmas two. Seed one.

1. *N. arundinaceus.* Common Bamboo. (*Bambos arundinacea*; Retz. Obs. fasc. 5. 24. Roxb. Coromand. v. 1. 55. t. 79. *Arundo Bambos*; Linn. Sp. Pl. 120. Illy; Rheede Hort. Malab. v. 1. 25. t. 16.)—Flowers half-whorled, in long spikes. Corolla awnless. Style smooth.—Native of the East Indies; delighting, according to Dr. Roxburgh, in a rich moist soil, such as the banks of



rivulets and lakes, among the mountains. The *stems* are arborescent, from ten to a hundred from each perennial root, erect and straight to the height of ten or twenty feet, then bending gently to one side, with innumerable, alternate, very compound, drooping, twisted *branches*; both *stem* and *branches* are round, very smooth, green, tubular, with frequent joints, at each of which is an internal transverse partition. *Thorns* two or three together at some of the joints, prominent, curved, the central one often extended into a branch. *Leaves* numerous, two-ranked, linear-lanceolate, acute, with sheathing imbricated *footstalks*, bearded at their summit. *Flowers* generally appearing before the leaves, in innumerable compound *panicles*, whose long drooping branches are spiked, the sessile *flowers* being disposed along them, two or three, or more, together, in half whorls. Each *spikelet* is oblong, smooth, varying greatly, from two to twelve, in the number of *florets*. The outer glume of the *corolla* is pointed, not awned, and the style is represented by Dr. Roxburgh as smooth.—This, the most common sort of Bamboo, is extremely useful in tropical climates for buildings, furniture, carriages, or any purpose where strength and lightness are wanted. Whether the idea of the slender clustered filleted columns, of Oriental and Gothic buildings, was taken from huts of bamboo, we leave to antiquaries to determine, or at least to conjecture. The large fresh joints of this plant minister to one elegant article of luxury, serving instead of a tin box to convey nosegays fresh, even for some hundreds of miles in India. The Bamboo is kept in our stoves for curiosity, as well as for its elegance, but does not blossom. The *seeds* are said to serve as food, in the manner of rice. A singular substance is found within the hollow joints of the old stems, called Tabaxir, or Tabasheer, by the Moors, Arabians, and Turks, and termed salt or milk of the bamboo by the natives of India. This is a hard concretion, pretended to possess great medical virtues; but on being chemically examined by Mr. Macie (now Smithson) it proved pure stony earth, affording another proof, in addition to many, that vegetables, of the grass tribe especially, do actually secrete that substance. See Phil. Transf. for 1790 and 1791.

2. *N. strictus*. Straight Bamboo. (*Bambos stricta*; Roxb. Coromand. v. 1. 58. t. 80. *Arundarbor spinosa*; Rumph. Amboin. v. 4. 14. t. 2?)—Flowers whorled, in long spikes. Corolla awned. Style downy.—Native of the East Indies, but in drier situations than the former. According to Dr. Roxburgh, it is certainly a distinct species; is not near so large, has a much smaller cavity in the *stems*, and is very straight. "Its great strength, solidity and straightness render it much fitter for a variety of uses than the common sort; and it is particularly employed by the natives to make shafts for their spears." The *leaves* appear to be more ovate than in the last, as well as shorter. A specimen in the Linnæan herbarium, answering in every particular to Dr. Roxburgh's account and plate, is very like what we have pointed out in Rumphius. In this the *leaves* are shorter, and more ovate, than the first species, and have many longitudinal ribs. The margin is rough with fine bristles, and some appearance of teeth, all directed forwards, or towards the point; in the former Dr. Roxburgh says the upper side and margins of the *leaves* are "backwardly hispid." This would be a curious and essential distinction, but we dare not rely on it without seeing specimens of both his plants.—Sufficient marks of difference will be found in the specific characters above.

3. *N. verticillata*. Leleba Bamboo. (*Bambusa verticillata*; Willd. Sp. Pl. v. 2. 245. *Arundo multiplex*; Loureir. Cochinch. 58. *A. arborea tenuis*, Leleba dicta;

Rumph. Amboin. v. 4. 1. t. 1.)—Flowers whorled, in simple erect spikes. Spines none. Stigmas three sessile.—Native of Amboina and Cochinchina. In the latter it serves for fences. The *stem* is shrubby, perennial, twelve feet high, branched, with very long hollow joints, destitute of thorns. *Leaves* linear-lanceolate. *Spikes* few, terminal, erect, each of several distant whorls. Loureiro describes the *calyx* as single-flowered, which Rumphius's figure, though not very perfect, seems to contradict. We cannot answer for the identity of their species. The character of the three feathery *stigmas*, without any *style*, attributed by the former to his plant, is a most decisive difference with regard to the two foregoing.—It is extremely probable that several species of this genus are included in the descriptions of Rumphius, but the attention of a good botanist on the spot would be requisite to develop the distinctions, and to settle his synonyms.

4. *N. paniculata*. Panicked Bamboo. (N. fig. 1, b, c, d; Lamarck Illustr. t. 264.)—Flowers panicked. Glumes strongly ribbed, with short blunt points.—Gathered by Commerçon on mountains in the isle of Bourbon. We know not what to make of Lamarck's fig. a, but our specimens from Thouin answer exactly to the figures we have cited. The panicked *flowers*, and the large, strong, ribbed, rigid-pointed glumes of their *corolla*, abundantly distinguish this species; from which Jusseu took his generic character, but which no author has till now defined.

NASUA, in *Zoology*, a species of *Viverra*; which see.

NASUDDEN, in *Geography*, a small island on the W. side of the gulf of Bothnia. N. lat. 64° 4', E. long. 20° 44'.

NASUS, in *Ichthyology*, a species of *Salmo*; which see.—Also, a species of *Cyprinus*; which see.

NATA, in *Geography*, a town of the island of Zante; seven miles N.W. of Zante.

NATA, or *St. Jago de Nata de los Cavalleros*, a town of South America, in the province of Panama, founded A.D. 1517, by Gaspard d'Espinoza. It is inhabited by a mixture of Spaniards and Indians. The town is situated on the bay of Panama. The bay of Nata, which is spacious and deep, lies on the S. coast of the isthmus of Darien, and on the N. Pacific ocean, and extends to the island Iguenas. The town is 50 miles S.W. of Panama. N. lat. 8° 35'. W. long. 81° 6'.

NATA, or *Natta*; *Naphtha*, or *Napta*, in *Surgery*, a wen with a narrow basis.

NATACHQUIN, in *Geography*, a river of Labrador, in North America, which runs into the sea, in N. lat. 50° 25'. W. long. 60° 45'. The little Natachquin is W.S.W. of this.

NATAL, a country of Africa, on the S.E. coast of Caffraria, so called by the Portuguese, who discovered it on Christmas day, A.D. 1498. Several capes or promontories of this country are called "Point Natal," the principal of which is situated, S. lat. 32°. E. long. 27° 19'.—Also, a river of Africa, forming the northern boundary of the country of Natal; and running into the Indian sea, S. lat. 29° 30'. E. long. 29°.—Also, a small island in the Indian sea. S. lat. 8° 30'. E. long. 47° 5'.—Also, a cape and town on the S. shore of the Rio Grande, on the N.E. coast of Brazil. On the point which forms the cape is the castle of the Three Kings, or *Fortaleza des tres Magos*. The town of Natal is three leagues from the castle, before which is good anchorage for ships in four to five fathoms' water, well secured from winds.—Also, the name of an English settlement in the country of Batta, in the island of Sumatra, called also "Natar." The English settled here about the



year 1752, and formed connections in that part of the country. It is inhabited by persons settled there for the convenience of trade, from the neighbouring countries of Acheen, Rou, and Menangeabow, and by their concourse and traffic it is become populous and rich. A large quantity of gold is procured from the country, some of the mines lying within 10 miles of the factory, and a considerable vent is found for imported goods. Like other Malay towns, it is governed by Dattoos, one of whom is styled Dattoo Bussar, or chief magistrate, and his sway is very great. Mariden's Sumatra.

**NATALIS**, *NATALIS dies*, or **NATALITIUM**, properly signifies a man's birth-day. See **NATIVITY**.

The word was first used among the heathens, to signify the feast held on the anniversary of the birth-day of an emperor; whence it came, in time, to signify any sort of feast. And accordingly, in the Fasti, we meet with *natalis solis*, *natalis invicti*, &c.

The primitive Christians, finding the word thus established, used it in the same manner; and hence we meet in the ancient martyrologists with *natalis calycis*, for the feast of the supper, or Maundy-Thursd; *natalis cathedrae*, for the pontificate of St. Peter; *natalis* or *natalitium*, of such a church, for the feast of the dedication. The word *genethlion* is used by the Greeks in the same sense as *natalis*, or *natalitium*, among the Latins.

**NATALITH**, *Ludi*, *Natal games*, were games introduced on the anniversaries of the birth-days of great men.

**NATALITIUS**, *Annulus*, *Natal ring*, was a ring only worn on the birth-day.

**NATANGEN**, or *Old Natangen*, in *Geography*, a province of Prussia, bounded on the N. and E. by the Pregel, on the S. by Ermeland, and on the W. by the Frische Haff. This country is well cultivated and populous, and consists partly of arable and partly of meadow land. Although it is in some parts very stony, yet it produces better corn than Samland, or Little Lithuania. It abounds also with wood, and yields variety of game, and plenty of fish. The capital is Brandenburg.

**NATANT LEAF**, in *Botany*. See **LEAF**.

**NATASKA**, in *Geography*, a town of Poland, in the palatinate of Kiev; 14 miles S. of Bialacerkiew.

**NATCHEZ**, a powerful nation of Indians, who formerly inhabited the country on the E. side of the Mississippi. Fort Rosalie, N. lat.  $31^{\circ} 40'$ , is in the country which they possessed. Nothing now remains of this nation but the name, by which the country is still denominated. The Creeks, or Muskokulges, rose upon its ruins. The French completed their destruction in 1730. The tribe of the Natchez, according to Dr. Robertson, (Hist. of Amer. vol. ii.) had advanced (as well as the people of Bogota) beyond the other uncultivated nations of America in their ideas of religion, as well as in their political institutions. The sun was the chief object of religious worship among the Natchez. In their temples, which were constructed with some magnificence, and decorated with various ornaments, according to their mode of architecture, they preserved a perpetual fire, as the purest emblem of their divinity. Ministers were appointed to watch and feed this sacred flame. The first function of the great chief of the nation, every morning, was an act of obedience to the sun; and festivals returned at stated seasons, which were celebrated by the whole community with solemn but unbloody rites. On the decease of their cazique or chief, a certain number of his wives, of his favourites, and of his slaves, were put to death, and interred together with him, that he might appear with the same dignity in his future station, and be waited upon by

the same attendants. Many of the deceased person's retainers offered themselves as voluntary victims, and courted the privilege of accompanying their departed master, as an high distinction. Others, however, laboured to avoid their doom, and several saved their lives by flying to the woods. As the Indian Bramins give an intoxicating draught to the women, who are to be burnt together with the bodies of their husbands, which renders them insensible of their approaching fate, the Natchez obliged their victims to swallow several large pills of tobacco, which produce a similar effect.

**NATCHEZ**, the principal town of the Mississippi territory, on the E. side of the Mississippi; 300 miles N. of New Orleans by water, 150 by the lake road. It has a Roman Catholic church, and is defended by a fort. N. lat.  $31^{\circ} 32'$ . As Natchez is likely to become a metropolis of the back settlements, a centre of administration, of literature, and of traffic, we shall here subjoin a brief account of its productions. The staple commodity of the settlement of Natchez is cotton, which the country produces in great abundance, and of good quality. The manufacture of calico, and the cultivation of tobacco, were carried on with spirit some years ago, but they have both given way to the culture of cotton. The country produces maize, or Indian corn, equal, if not superior, to that in any part of the United States. The time of planting is from the beginning of March until the beginning of July. The cotton is generally planted in the latter end of February, and the beginning of March. Rye, which has been attempted, has succeeded in some places; but wheat has failed. Apples and cherries are scarce, but peaches, plums, and figs, are very abundant. The vegetables of the Middle States generally succeed here. The sugar-cane has been tried, but its effects have not been ascertained. From the great number of artificial mounds of earth visible through the whole settlement of Natchez, it must, at some former period, have been well peopled; besides, in all parts where new plantations are opened, broken Indian earthen-ware is found; some of the pieces being in tolerable preservation, and retaining distinctly the original ornaments, but none of it appears to have ever been glazed.

**NATCHIKIN**, a town of Kamtschatka, in the vicinity of which is a mineral spring; 30 miles E. of Bolcheretsk.

**NATCHING-TONG**, a town of Corea; 18 miles W.N.W. of Han.

**NATCHITOCHE**. See **NACHITOCHE**.

**NACHITOCHE**, or *Nachitoches*, a name given to Red river in Louisiana, which runs into the Mississippi, N. lat.  $31^{\circ} 15'$ . W. long.  $91^{\circ} 47'$ .

**NATCHUS**, a town of the state of Georgia. N. lat.  $33^{\circ} 27'$ . W. long.  $86^{\circ} 40'$ .

**NATECO**, a town of Africa, in the kingdom of Bambook; 100 miles S.E. of Galam.

**NATENS**, a town of Persia, in the province of Irak; 60 miles N. of Ispahan.

**NATERNBACH**, a town of Austria; eight miles W.N.W. of Efferding.

**NATERNBERG**, a town and castle of Bavaria, near the Danube; nine miles N.N.W. of Osterhofen.

**NATES**, in *Anatomy*, the buttocks, which are proportionally larger in man than in any animal, on account of the great size of the muscles concerned in maintaining the body erect. The convexities of the buttocks are formed principally by the glutei magni muscles, covered by a considerable stratum of fat. In the cleft between them the opening of the end of the intestinal canal is found. See **GLUTEUS** and **MAN**.

**NATES Cerebri**, are two circular protuberances of the brain,



brain, situate on the back-side of the medulla oblongata, near the cerebellum.

NATEW, in *Geography*, a town of the county of Tyrol; six miles W.S.W. of Inspruck.

NATHAN, ISAAC, in *Biography*, a learned rabbi who flourished in the fifteenth century, was the first Jew who made a Hebrew concordance to the bible, on which he was occupied from the year 1438 to 1445, which, by his own acknowledgment, was not original, but for the most part copied from Latin concordances, so that the Jews themselves are indebted to Christians for their useful works of this kind. His publication was entitled "Light to the Path." It was first printed at Venice in 1524, and afterwards in a more correct state, with a Talmudical index, at Basil, in 1581, and at Rome in 1622, in four volumes folio. The most complete and valuable edition of it is that of Buxtorf the elder, which was published at Basil in 1632, and which is said by no means to have been superseded by one printed in the middle of the last century by the Rev. W. Romaine, in four volumes folio.

NATHAN, in *Geography*, a town of Persia, in Irak; 60 miles N.N.E. of Isfahan.

NATHE, a provincial term applied to the nave of a wheel.

NATICK, in *Geography*, an ancient township of America, in Middlesex county, Massachusetts, situated upon Charles river; 18 miles S.W. of Boston. The famous Mr. Eliot formed a religious society here; and at his motion the General Court granted the land in this township, containing about 6000 acres, to the Indians. In 1761 it was incorporated into an English district, and in 1781 into a township, and it now contains 694 inhabitants.

NATION, a collective term, used for a considerable people, inhabiting a certain extent of ground, inclosed within fixed limits, and under the same government.

Each nation has its peculiar character; and it is proverbially said, *Light as a Frenchman, Waggish as an Italian, Grave as a Spaniard, Serious as an Englishman, Fierce as a Scotchman, Drunken as a German, Idle as an Irishman, Deceitful as a Greek, &c.*

NATION is also used, in some universities, for a distinction of the scholars, and professors of colleges.

The faculty of Paris consists of four nations; viz. that of France, that of Normandy, that of Picardy, and that of Germany; which are again, excepting that of Normandy, distinguished into tribes; and each tribe has its deacon. The German nation comprehends all foreign nations, English, Italian, &c.

When the procureur of the French nation speaks in public, his style is, *Honoranda Gallorum natio*; he of Picardy says, *Fidelissima Pacardorum natio*; he of Normandy, *Veneranda Normannorum natio*; he of the nation of Germany, *Constantissima Germanorum natio*.

NATIONS, *Law of*. See LAW.

NATIONAL DEBT, is the debt due by the state to the public, on account of monies borrowed and funded for defraying the charges of government.

In order to trace the origin of this debt, it is proper to be considered, that after the Revolution, when our connections with Europe introduced a new system of foreign politics, the expences of the nation, not only in settling the new establishment, but in maintaining long wars, as principals on the continent, for the security of the Dutch barrier, reducing the French monarchy, settling the Spanish succession, supporting the house of Austria, maintaining the liberties of the Germanic body, and other purposes, increased to an unusual degree; inasmuch that it was not thought advisable

to raise all the expences of any one year by taxes to be levied within that year, lest the unaccustomed weight of them should create murmurs among the people. It was, therefore, the policy of the times to anticipate the revenues of their posterity, by borrowing immense sums for the current service of the state, and to lay no more taxes upon the subject than would suffice to pay the annual interest of the sums so borrowed; by this means converting the principal debt into a new species of property, transferrable from one man to another at any time, and in any quantity; a system which seems to have had its origin in the state of Florence, A. D. 1344, which government then owed about 60,000*l.* sterling; and being unable to pay it, formed the principal into an aggregate sum, called metaphorically a mount or bank, the shares whereof were transferrable like our stocks, with interest at 5 *per cent.* the prices varying according to the exigencies of the state. This laid the foundation of what is called the "national debt;" for a few long annuities created in the reign of Charles II. will hardly deserve that name. For further particulars, see the article *Public DEBTS*. See also FUND and REVENUE.

NATIONAL Synod. See SYNOD and COUNCIL.

NATISTAGOET HARBOUR, in *Geography*, a harbour on the S. coast of Labrador. N. lat. 50° 6'. W. long. 60° 55'.

NATIVE is applied to a person considered as born in a certain place, or deriving his origin from it.

The more accurate writers distinguish between a native of a place and one born there. Born signifies no more than the having been there produced, or brought into the world, whether that were the proper country or habitation of the parents, or whether they were there only by accident, as strangers, &c. Whereas native refers to the proper mansion or residence of the parents, and the family, and where the person has his education.

And hence a person may be a native of one place, and born at another: thus Jesus Christ is called a Nazarite, and Galilean, as a native, though he was born at Bethlehem in Judah.

NATIVE, *Nativus*, in our *Ancient Law Books*, signified a person who was born a slave or villain.

By which he differed from one who had sold himself, or became a slave by his own deed, who was called a *bondman*. See VILLAIN.

NATIVI *Tenentes*, are those freemen who hold native land; i. e. land subject to the services of natives. Spelm.

NATIVI *de Stirpie*, were villains or bondmen by birth or family. There were also *nativi conventionarii*, who were villains by contract or covenant. "Servi enim alii natura, alii facti, alii emptione, alii redemptione, alii sua vel alterius datione." LL. Hen. I. cap. 76.

In Cornwall it was a custom, that if a freeman married *nativam* (that is, a neife) and brought her *ad liberum teneamentum, et liberum thorum*, and had two daughters, one of them was free, and the other a villain. Braet. lib. iv. c. 21. See NEIFE.

NATIVIDAD, in *Geography*, a mine-town of Brazil, in the government of Goyas. S. lat. 13° 30'. W. long. 31° 20'.—Also, a small island in the Pacific ocean, near the coast of California; 14 miles S.S.E. from the island of Cerros.—Also, a sea-port of Mexico, in New Galicia; 180 miles S.W. of Mechoacan. N. lat. 19° 20'. W. long. 106° 16'.

NATIVITY, NATIVITAS, or *Natal day*, the day of one's birth. The term is chiefly used in speaking of saints, &c. The Nativity of St. John Baptist, celebrated in the Romish church with great solemnity on the twenty-fourth of June;



June; the Nativity of the Holy Virgin, a feast established by pope Sergius I. who was advanced to the see of Rome in 687, and observed on the eighth of September, &c. When we say absolutely the Nativity, it is understood of that of Jesus Christ, or the feast of Christmas. See FEAST, CHRISTMAS, &c.

NATIVITY, *Nativitas*, in *Ancient Law Books*, signifies bondage, or servitude.

NATIVITY, in *Astrology*, the theme or figure of the heavens, and particularly of the twelve houses, at the moment when a person was born; called also the *horoscope*.

Waiting the nativity, or by calculation seeking to know how long the queen should live, &c. was made felony, anno 23 Eliz. c. 2.

NATIVO HABENDO, in *Law*, a writ directed to the sheriff, for a lord who claimed inheritance in any villain, when his villain was run away from him, for the apprehending and restoring him to the lord.

NATOLIA, ANATOLIA, or *Anadoli*, in *Geography*, a province of Asiatic Turkey, bounded on the N. by the Black sea, on the E. by Caramania, on the S. by the Mediterranean, and on the W. by the Archipelago and the sea of Marmora; about 400 miles in its greatest extent from E. to W., and 350 from N. to S. Anatolia was anciently denominated Asia simply, or by way of peculiar excellence, as being the best spot in this part of the world, and adorned with many opulent cities, and considerable states. Afterwards it was distinguished from the whole Asiatic region by the epithet of Minor or Lesser, and accordingly denominated Asia Minor; it derived the name of Anatolia from its eastern situation, with regard to Europe, and it is still called the Levant. Anatolia, in its largest sense, comprehends the ancient provinces of Galatia, Paphlagonia, Bithynia, Pontus, Mysia, Phrygia, Lydia and Meonia, Æolis, Ionia, Caria, Doris, Pamphylia, Pisidia, Cappadocia, Lycia, Lycaonia, and Cilicia. Later geographers have divided it into four parts, according to their situation; viz. Anatolia, properly so called, on the western part; Caramania, on the southern; Aladulia, on the eastern, and Amasia, on the northern. Anatolia, properly so called, is divided into the following districts, viz. Bithynia, Mysia, Æolis, Ionia, Caria, Doris, Lydia, Phrygia, Galatia, and Paphlagonia; which see respectively.

Anatolia, or Natolia, is now governed by a beglerbeg, who resides at Kiutaja, under whom are several sangiacs. The soil is, in general, fertile, producing corn, tobacco, and fruits of various kinds; cotton and silk; and notwithstanding the indolence of the Turks, and the oppressive nature of their government, its commerce is considerable, particularly in carpets, leather, drugs, cotton, silk, and other articles of produce and manufacture. Most of the inhabitants are Mahometans; with a considerable proportion of Christians, particularly of the Greek church, governed by patriarchs, archbishops, and bishops, who are tolerated by the Porte. Here are likewise many Armenians, and some Roman Catholics.

NATOLICA, an island in the Mediterranean, near the coast of Greece. N. lat.  $38^{\circ} 39'$ . E. long.  $21^{\circ} 26'$ .

NATRA, a town of Sweden, in Angermanland; 35 miles N.N.E. of Hernösand.

NATRAPOLLAM, a town of Hindoostan, in Myfore; 6 miles N. of Allumbaddy.

NATRIX, in *Zoology*; the name of the common or water-snake, called also *torquata*, from the ring about its neck. See COLUBER *Natrix*.

NATROLITE, in *Mineralogy*, the name given by Klapproth (Mem. Acad. Scien. Berlin, 1803) to a fossil found at Hogau in Suabia, on the borders of Switzerland. It is

deposited in the crevices, or clefts and cavities, of the fonorous porphyry (Klinginlein porphyry), from having a sound, nearly metallic, which form the mountains and rocks of Hohenwial, Hohenkraken, and Mügdeberg. The colour of this fossil is a dirty ochraceous yellow, approaching sometimes to an isabella yellow, or at other times to a yellowish-brown, intersected with concentric white lines. It is compact; its internal surface has a silky lustre; it breaks into wedge-like pieces, the edges of which possess little transparency; it is not very hard, extremely brittle, and its specific gravity is 2.200: 100 grains of this fossil, ignited in a silver crucible, lost 9 grains; it fuses quickly before the blowpipe into a transparent glass, full of small air-bubbles, and in a porcelain furnace melts into a brown glass; and in a charcoal crucible it afforded the same product, with minute globules of iron in the surface. From the analysis of Klapproth, 100 parts of the natrolite yielded

Siliceous earth	-	48	grains.
Alumine	-	24.25	
Oxyd of iron	-	1.75	
Soda	-	16.50	
Water	-	9	
		99.50	

NATRON, or ANATRON, in *Natural History*, an earthy alkaline salt, or mineral alkali, taken out of lakes of stagnant water, in the desert of Nitria, in Egypt. See CARBONAT of Soda, and SODA.

Natron is much of the nature of nitre; whence it is by many called *Egyptian nitre*, and is supposed to be the proper nitre of the ancients. As our saltpetre was unknown to them, they gave the name of nitre to this substance, described by the Arabs under the name of "natroum," of which we have made natron. In consequence of a want of duly examining the passages of Theophrastus, Dioscorides, Galen and Pliny, several moderns have confounded nitre and natron, which are substances materially different. It is not possible to ascertain the extent of the lakes on which the natron is formed, as it varies according to the seasons. When the water is most abundant, the two lakes are united into one, which is much longer than it is broad, and occupies a space of several leagues; at other times they are only ponds of no great extent. If Pliny, when he asserted that the Nile acts on the saltcrns of Nitria as the sea does on salt-water ponds, meant that the inundation of the river extended as far as the lakes, he was mistaken, as father Siccard has shewn. But if he meant no more than that there is a sort of conformity between the Nile and the lakes, he suggests a fact, observed by the people of the country, and by them erroneously attributed to a communication that cannot exist between the waters of the Nile and the natron lakes. The rise of the latter is in an inverse proportion to the former; so that when the Nile begins to overflow, the lakes decrease so much as to appear only like small ponds, at the time when the river is at its greatest height. The waters, on the contrary, seem to return, when those of the Nile decrease, and inundate a long extent of the valley, while those of the river are at the lowest. In order to account for this fact, it should be considered, that the rise of the Nile, occasioned by the melted snow and rains in Abyssinia, begins at the summer solstice, that is, in the hottest and driest season in Egypt: and that at the time when the river has retired, or during the winter, the rains, nevertheless, fall very abundantly in the northern part of that country; and hence it will be obvious, that the season when



when the Nile increases must also be that in which the waters spread over the sands, dry up, and diminish; and that, on the other hand, the local rains, which can in no respect influence the overflow of the Nile, are sufficient to increase the springs that supply this body of water. When the two lakes separate, and their waters retire, the ground which they have inundated, and now leave exposed to view, is covered with a sediment that is crystallized and hardened by the sun; that is, the natron. The thickness of this layer of salt varies according to the longer or shorter continuance of the waters on the ground. In those spots which have been moistened only for a very short time, the natron exhibits but a slight efflorescence, resembling flakes of snow. It also appears, that at certain seasons the waters are covered with this substance. It is procured principally in the month of August; but is found likewise, in smaller quantity, during the rest of the year. It is disengaged from the ground by iron instruments, and carried on the backs of camels as far as "Terané," where it is shipped on the Nile to be conveyed to Cairo, or to the storehouses at Rosetta. The quantity annually collected amounts to near 25,000 quintals, and a great deal more might be obtained: it is usually sold at from 15 to 18 medines the quintal, delivered in either of these two towns.

Natron is seldom to be met with perfectly pure, independently of the earthy substances with which it is almost constantly mixed; it is not an alkali entirely unadulterated; it is generally blended with marine salt, with Glauber's salt, and in some degree with vitriolic tartar. In the storehouses at Rosetta there are two sorts, *viz.* the common and the "Sultanié," a word which corresponds to the epithet *royal*. This latter is whiter, better crystallized, and purer than the common sort: it is consequently stronger, and when used, a smaller quantity is sufficient. This mineral alkali possesses the same properties as vegetable alkali, or "foda;" but it is said to possess them in a higher degree of strength. Its principal use is the bleaching of cloth and thread. The method pursued at Rosetta is as follows. The skeins of thread are arranged in a large copper, set in masonry; above them is put a layer of natron; and then a sufficient quantity of cold water is poured in to soak both the thread and the natron. The whole is left in this situation for three days, at the end of which the thread is taken out and hung upon sticks placed over the copper. When it has drained, a fire is lighted under the copper, and the water, in which the thread was soaked, with the natron, is made to boil, after having received an addition of some lime. The thread is steeped and stirred about in this hot lye, and washed in it several times, without being left there. It is immediately taken to the Nile, in which it is washed and beaten; it is then spread out to dry. When the skeins are very dry, they are again washed in the whey which runs from cheeses, and which, in Arabic, is called "Mefch." This is a sort of stiffening that improves the cloth, and when the Egyptians handle a soft cloth, they say that it wants "mefch." To bleach 200lbs. of thread, it generally requires 100lbs. of natron, and from 60 to 80lbs. of lime; observing, however, that the "Sultanié" natron, that is, the purer sort, being stronger than the common, a smaller quantity must be used; without this precaution, the thread, or linen, would be liable to be burnt. The natron trade, though pretty brisk with Turkey, and even with the state of Venice, where this alkali, mixed with sandy stone, makes the beautiful blown glass of Murano, was absolutely at an end, with regard to France; though in the year 1777 it appeared likely to be revived. It is not solely to the bleaching of cloths and thread, that the use of natron is confined in the country

where it is formed. It is also used in dyeing, in the preparation of leather, in making glass, in bleaching linen, in dough instead of leaven, for preserving meat and making it tender, and lastly, to mix with snuff, and make it more pungent. Natron is also found in another lake, less considerable than that called the lake of Terané, which is in the desert of Nitria, or of St. Macarius, *viz.* near Damanhour, and in other countries, besides Egypt. See CARBONAT of Soda. Sonnini's Travels in Egypt.

NATRUDACOTTA, in *Geography*, a town of Hindoostan, in Tinevelly; 16 miles E. of Tinevelly.

NATT, a provincial term applied to the hornless breeds of animals of the sheep and cattle kind. Thus we have the natt or Devonshire breed of sheep. It is sometimes written *not*.

NATTA, MARCANTONIO, in *Biography*, a celebrated Italian jurist, was born of a noble family, at Asti, and studied law at Pavia in the early part of the sixteenth century, under Corti Maino and Decio. He was from a very early age extremely fond of literature, which, as he increased in years, became his only passion, and he made so great progress in it that he was admitted among the Jurisconsulti before he had attained the age of twenty-three, and was at the same time advanced to be senator at Casal. His fame was so high that he received invitations from several princes to settle in their dominions, and exercise among them various honourable offices. He published legal consultations, which were in high estimation, likewise theological pieces, and some tracts on philosophy. Among them, the principal are "De Pulchro;" "De Deo," in fifteen books; "De immortalitate Animi;" "De Passione Domini." Moreri.

NATTAL, in *Geography*. See NATAL.

NATTAM, a town and fortress of Hindoostan, in the country of Madura; 18 miles N. of Madura. N. lat. 10° 10'. E. long 78° 18'.—Also, a town of Hindoostan, in the Carnatic; 28 miles W.N.W. of Trichinopoly.

NATTENAT, an Indian village in Nootka sound, in the vicinity of which to the northward is a remarkable cataract. N. lat. 48° 40'. W. long. 124° 6'.

NATTER-JACK, in *Zoology*, a species of *Rana*, which see. See also TOAD.

NATTORE, in *Geography*, a town of Bengal, capital of the circar of Bettoorah; 115 miles N.N.E. of Calcutta. N. lat. 24° 25'. E. long. 89° 7'.

NATTROW, a town of the Birman empire; 10 miles N.W. of Ava.

NATUNA ISLANDS, a cluster of small islands in the Chinese sea; 60 miles W. from the coast of Borneo. N. lat. 4°. E. long. 108°.

NATUPA, a town on the W. coast of the island of Panay. N. lat. 11° 30'. E. long. 122°.

NATURAL, something that relates to nature; that arises from a principle of nature; or is conformable to the ordinary course and order of nature.

When a stone falls downwards, we vulgarly say it does it by a natural motion; but if it be thrown upwards, its motion is said to be violent.

Water suspended in a sucking pump is said to be out of its natural place: cures wrought by medicines, are *natural* operations; but the miraculous ones wrought by Christ, *supernatural*. See MIRACLE, &c.

NATURAL Cause. See CAUSE.

NATURAL Children, are those born out of lawful wedlock. See BASTARD.

NATURAL Day. See DAY.

NATURAL Year. See YEAR.



NATURAL Functions, in the *Animal Economy*. See FUNCTIONS.

NATURAL History, a description of the natural products of the earth, water, or air; *v. gr.* beasts, birds, fish, insects, worms, plants, metals, minerals, and fossils; together with such extraordinary phenomena as at any time appear in the material world; as meteors, monsters, &c. See BOTANY, ENTOMOLOGY, GEOLOGY, ICHTHYOLOGY, METEOROLOGY, ORNITHOLOGY, ZOOLOGY, &c. &c. together with the articles above enumerated.

Besides general Natural History, as those of Pliny, &c. there are particular ones; and those of two kinds. The first, those which only consider one kind of things; such as the History of Shells, by Dr. Lister; of Fishes, by Willughby; that of Birds, by the same; that of Plants, by Ray; those of Insects, by Swammerdam and Mouffet; that of Animals, by Gesner; that of Fossils, by Agricola, Mercatus, &c.

The second, those which consider the several kinds of natural things found in particular countries, or provinces: as the Natural History of Dauphiné, by Chorier; the Natural History of the Antilles, by F. Du Tertre, and M. Lonvillers de Poincy; those of Oxfordshire, and Staffordshire, by Dr. Plott; that of Lancashire, by Leigh; of Northamptonshire, by Morton; that of the Western Islands, by Martin, &c.

The natural history only of one particular place, is a subject very extensive in its materials, and not to be set about without great care and circumspection. Mr. Boyle has favoured the world with a list of the heads under which to arrange things, and what to enquire after on such an occasion.

The general heads under which he comprehends the articles of this history are four; the things which regard the heavens, the air, the waters, and the earth.

Of the first class are the longitude and latitude of the place; the length of the longest and shortest days and nights; the climates, parallels, &c. what fixed stars are seen, and what are not seen there.

About the air may be observed, its temperature, as to the first four qualities, and the measure of them; its weight, clearness, refractive power; its subtlety or coarseness; its abounding with or wanting an esurine salt; its variations according to the seasons of the year, and the times of the day: what duration the several kinds of weather usually have: what meteors it is most or least apt to produce; and in what order they are generated, and how long they generally last: what winds it is most subject to; whether any of them are stated or ordinary: what diseases are said to be epidemical, or depending on the state and condition of the air: what other disease it is subject to, wherein the air may be supposed to have some share: what is the usual salubrity and insalubrity of it, and what sorts of constitutions it agrees with, what it does not.

About the waters, it may be proper to observe the sea, its depth, tides, currents, saltness, and other qualities: next the rivers will come under consideration, their depth, length, course, inundation, and the goodness or badness of their waters, with their gravity, and other peculiar qualities. After these, the lakes, springs, ponds, &c. are to be considered, especially the mineral waters, their kinds, qualities, and virtues, and the manner of trying them. The inhabitants of the waters may follow here; and the particular kinds of fish that are found there, whether of the sea or rivers, are to be mentioned, with an account of their stores, bigness, goodness, seasons of perfection, haunts, peculiarities of any kind relating to them, and the manner of taking them, especially when there is any thing singular in it.

The things relating to the earth are last to be examined: these are, first, the earth itself, then its inhabitants and its various productions, whether external or internal. In the earth itself may be observed, its dimensions, situation east, west, north, and south: its figure; its plains and vallies, their extent; its hills and mountains, and the height of the most lofty, both in reference to the neighbouring vallies and plains, and to the level of the sea; as also whether the mountains lie scattered, or are disposed in ridges; and if of the latter kind, whether they run east, west, north, or south. What promontories also, and what fiery or smoking hills it has, if any: whether the country be coherent, or much broken into islands; what the magnetical declination is in several places, and the variation of that declination in the same place; and if those be considerable, what may be conjectured as the occasions of them, whether the vicinity of iron-mines, of subterraneous fires, or what else. What the nature of the soil is, whether clayey, sandy, or of good mould; and what vegetables, plants, and trees best agree with it and succeed in it, what worst. By what particular contrivances the inhabitants improve the advantages, or remedy the disadvantages of the soil; and what hidden qualities the soil may have. The inhabitants of the earth are then to be considered, both natives, and strangers that have been long settled there; and in particular, their stature, colour, features, strength, agility, or defects of these; and their complexions, hair, beauty, and the like; their diet, inclinations, and customs, so far as they are not owing to education: the fruitfulness or barrenness of the women; their hard or easy labours: the diseases they are most subject to, and any remarkable symptoms attending them.

As to the external productions of the earth, the enquiries are to be these: what grasses, grains, and fruit it best produces: the herbs, flowers, and timber trees; and the coppices, groves, forests, and woods the country has, or wants: what peculiarities are observable in any of them; what soils they most like or dislike, and with what culture they thrive best. Then what animals the country has or wants; both as to wild beasts and birds of prey, and as to poultry and cattle of all sorts; and particularly, if they have any animals that are not common, or any thing particular in those they have. After those, the subterranean stores are to be examined; what minerals the earth affords, and what it wants: then what quarries of stone, and in what manner they lie: what clays and earths are found there; as clays, marles, fullers' earths, earths for tobacco-pipes, earth for potters' wares, medicinal earths: what other mineral productions it yields, whether coals, salt mines, or salt springs, alum, vitriol, sulphur, &c. What metals the country yields, with a description of the mines of them; their depths, numbers, situations, signs, waters, damps, quantities of ores, goodness of the ores, and the ways in use for reducing them to metals.

To these general heads should be added, inquiries into traditions in the country, of any thing relating to it, whether peculiar to it, or only more common there than elsewhere; and where these require learning or skill in the answerer, the utmost care is to be taken to put the people in a way to give their accounts in a satisfactory manner; for a false or bad account of any thing is always much worse than no account at all. Phil. Trans. N<sup>o</sup> 11.

The Linnæan system of natural history, which we chiefly follow in the New Cyclopædia, is divided into five branches, each subordinate to the other: these are

Class,  
Order,  
Genus,

Species,



# N A T

## Species, and Varieties:

with their names and characters. Of the three grand divisions, *viz.* the ANIMAL, VEGETABLE, and MINERAL kingdoms; the *animal* ranks highest in comparative estimation; the next is the *vegetable*, and the lowest is the *mineral* kingdom. See BOTANY, CLASSIFICATION, and MINERALOGY; with regard to the animal kingdom: it is divided into six classes, formed from their internal structure.

### Classes.

1. Mammalia { Heart with two auricles } viviparous.  
                  { and two ventricles; }
2. Birds { blood warm and red. } oviparous.
3. Amphibia { Heart with one auricle } lung voluntary.  
                  { and one ventricle; }
4. Fishes { blood cold and red. }
5. Insects { Heart with one auricle } have antennæ.  
                  { and no ventricle; fa- }
6. Vermes { nies cold and white. } tentacula.

The above six classes are divided into orders, and the orders into genera, and the genera into species and varieties.

### Class I. MAMMALIA.

Names of the orders.	No. of genera in the several orders.	No. of species in the several orders.
Primates - -	4 - -	88
Bruta - -	9 - -	30
Feræ - -	10 - -	186
Glires - -	10 - -	129
Pecora - -	8 - -	90
Belluæ - -	4 - -	25
Cete - -	4 - -	14
	<hr/> 49	<hr/> 562

### Class II. AVES.

Accipitres - -	4 - -	271
Picæ - -	26 - -	663
Anseres - -	13 - -	314
Grallæ - -	20 - -	326
Gallinæ - -	10 - -	129
Passeres - -	17 - -	983
	<hr/> 90	<hr/> 2686

### Class III. AMPHIBIA.

Reptilia - -	5 - -	154
Serpentes - -	2 - -	219
	<hr/> 7	<hr/> 373

### Class IV. PISCES.

Apodes - -	12 - -	40
Jugulares - -	6 - -	52
Thoracici - -	21 - -	452
Abdominales - -	16 - -	202
Branchiofegi - -	10 - -	81
Chondroptergi - -	7 - -	65
	<hr/> 72	<hr/> 892

# N A T

## Class V. INSECTÆ.

Names of the orders.	No. of genera in the several orders.	No. of species in the several orders.
Coleoptera - -	55 - -	4048
Hemiptera - -	14 - -	1464
Lepidoptera - -	3 - -	2600
Neuroptera - -	7 - -	174
Hymenoptera - -	25 - -	1239
Diptera - -	12 - -	692
Aptera - -	15 - -	679
	<hr/> 131	<hr/> 10896

## Class VI. VERMES.

Intestina - -	21 - -	384
Mollusca - -	31 - -	538
Testacea - -	36 - -	2525
Zoophyta - -	15 - -	498
Infusoria - -	15 - -	191
	<hr/> 118	<hr/> 4136

Such is the tabular view of the animal kingdom, according to the Linnæan system; it must, however, necessarily be imperfect, inasmuch as new species in the several genera are continually discovered, and not unfrequently new genera likewise are added to the orders. See the several orders and genera in the alphabetical arrangement of the dictionary.

For another mode of classification, and remarks on this of Linnæus, &c. we refer to the article CLASSIFICATION.

NATURAL *Horizon*, is the sensible or physical *horizon*; which see.

NATURAL *Inclinations*, are those tendencies or motions of the mind, towards things seemingly good, which are common in a greater or less degree, to all mankind. See APPETITE.

Natural inclination, according to F. Malebranche, is the same thing, with regard to minds, that motion is with regard to bodies: and as all the varieties in the material world arise from the several motions of bodies; so do all those of the intellectual world from inclinations: and as all motions are the result of impressions immediately communicated by the finger of the Creator; so all inclinations are certainly nothing else but continual impressions of the will of the Creator on that of the creature; and must therefore, of necessity, be agreeable to his; and therefore can naturally have no principal end but his glory; nor any secondary one but their own preservation, and that of others, both still with regard to his will, who gave them being.

Now as, properly speaking, there is but one love in God; *viz.* that of himself; so he only impresses one love or desire in us; which is of that good in the general. It is this general love, or desire, is the principle of all our particular ones; as, in effect, it is the will itself; the will being defined to be a continual impression of the Author of nature, which carries the mind of man to good in general.

But the impression towards good in the general doth not only proceed from God; but also all our inclinations to particular goods; as, *v. gr.* self-preservation, &c.

NATURAL *Law*. See LAW of Nature.

NATURAL *Liberty*. See LIBERTY.

NATURAL *Magic* is that which only makes use of natural causes. See MAGIC.

NATURAL



NATURAL Orders of Plants, in Botany, are such as are founded on principles of natural affinity, bringing together, under one point of view, such genera as have certain characters in common, independent of all artificial modes of classification. Linnæus first pointed out the difference between a natural and an artificial method of arranging plants. His sexual system is an example of the latter, though many of its classes or orders happen to be likewise natural assemblages. It was very unfair in its early opposers, who are now with their criticisms gone off the stage, to complain of this system, as interfering with the manifest order of nature in several instances; as its pretensions are merely to be easy and commodious, not natural. It is equally unfair in those who have given all their attention to natural orders, and who by their joint labours have greatly advanced that interesting branch of knowledge, to condemn the imperfect attempts of him who first led the way to their acquirements, or at least first pointed out the importance of their pursuit.

The ideas of Linnæus, on the subject before us, are best collected from a posthumous publication, compiled from his private courses of lectures, by his distinguished pupils Fabricius and Giseke, and given to the world by the latter, at **Hamburg** in 1792, under the title of *Caroli a Linne Prælectiones in Ordines Naturales Plantarum*. Linnæus had long before published what he modestly termed fragments of natural orders, and had given, at the end of his *Genera Plantarum*, an enumeration of those orders, to the number of 58, with an arrangement of the known genera under them, but without any definition or character whatever. He was always persuaded that no such could be given; at least not until all the plants in the world were known, and reduced to their respective orders. He also perceived that most of the orders which border upon each other, however distinct they may be on the whole, are frequently connected by some intermediate genus; and that such intermediate genera render the verbal definition of the orders nearly impossible, as they commonly form the most violent exceptions in character, to the orders to which they manifestly belong. Such is *Eryngium*, with its capitate flowers and thistle-like habit, among the most natural order of umbelliferous plants, with which its organs of fructification, as well as its sensible qualities, and its properties, agree. We would remark however that some of these supposed intermediate genera, ought rather to be considered as constituting intermediate orders, but this might lead to an immense and disproportionate multiplication of the latter, attended with more trouble than use. Linnæus always considered his orders as forming a map, in which they were severally approximated by various points of affinity, rather than a regular series in which they followed each other in gradual distinction. He is careful to tell us, in his *Classes Plantarum* 487, that he has disposed his orders without any principle of natural connection between them, merely studying to bring together under each the genera that belonged to it. He disclaims, in this arrangement, all rules taken *à priori*, from one part of fructification or another, being guided alone by the simple symmetry of all the parts, which however is often indicated by peculiar characters. For the use of those who may aspire to form a clue to his arrangement, he suggests that no general character is more to be relied on, than what depends on the situation of parts, with respect to each other, especially of the seed, and particularly in the seed itself. It is there to be observed whether the vegetating point, or embryo, perforates the seed longitudinally, being enclosed on every side; or whether it is placed at one side, externally or internally with respect to the cotyledons; whether in the

base, near the base, at the side, or at the top of the seed. The base of the seed is the scar, by which it is attached to the pericarp, or to its own proper receptacle. In the work whence these remarks are taken, Linnæus has not even given names to his orders; but in his own copy he from time to time supplied this defect; and in the *Genera Plantarum* each order appears with an appropriate, and generally descriptive appellation, of a single word. He here takes care to inculcate, that such orders are designed to teach the nature or mutual affinities of plants, the artificial system being intended to make them out by; for which purpose the former, destitute of a key or clue, are necessarily inadequate, and do not of themselves constitute a system. He adds, that those who arrange plants after such imperfect fragments of a natural method, rejecting the artificial system, seem to him like persons overturning a commodious and well-covered house, to build another in its place, whose roof they are incompetent to complete. Linnæus however advanced another step, subsequently to the publication of the last edition of his *Genera Plantarum*, and declared to Giseke in a conversation, that if he were to republish that book, he should not only make many changes in his natural orders, but alter their arrangement. He proposed to separate the whole into three great sections, which (as we may gather from his observations elsewhere) he would term classes. These are

1. *Monocotyledones*, comprehending orders - I to II
2. *Dicotyledones*, (having two or more cotyledons), - II—54
3. *Acotyledones*, (having none at all), - 55—58

the last order (*fungi*) being perhaps altogether excluded. He hinted further, a scheme of dividing the *Dicotyledones*, according to some principle which seems to have been but in embryo in his own mind. It was the only thing he concealed from Giseke in all his communications with him; except that he would never allow him to copy the manuscript alterations he had made in the arrangement of the genera under his various orders; doubtless because he considered his own ideas as progressive and unfixed.

In the conception of his orders, Linnæus ever kept the fructification solely in view, though the names of some few of them allude to the habit. We shall here enumerate these orders. An explanation of them, with a detail of the genera of each, and some of the above-mentioned manuscript alterations, will in general be found in their proper places, in our several volumes.

1. *Palmeæ*. Palm-trees.
2. *Piperitæ*. Arum and its allies.
3. *Calamariæ*. Grass-leaved plants as *Carex*.
4. *Gramina*. True Grasses.
5. *Tripetaloidææ*. *Juncus*, &c.
6. *Ensutæ*. Sword-leaved plants.
7. *Orchideæ*. Orchis tribe.
8. *Scitamineæ*. *Anomum*, &c.
9. *Spathaceæ*. *Narcissus*, &c.
10. *Coronariæ*. Liliaceous plants.
11. *Sarmentaceæ*. *Convallaria*. &c.
12. *Holeraceæ*. *Chenopodium*, and various anomalous genera.
13. *Succulente*. Succulent plants.
14. *Gruinales*. Geranium tribe.
15. *Inundatæ*. This order, which we have accidentally omitted in its place, consists of *Zannichellia*, *Ruppia*, *Potamogeton*, *Myriophyllum*, *Ceratophyllum*, *Proserpinaca*, *Elatine* and *Hippuris*. To these are added, in manuscript, *Chara*, *Najas*, *Aponogeton*, *Saururus*, *Serpicula*, *Callitriche*, *Lemna* and *Pistia*—rather a vague assemblage all together.



16. *Calyciflora*. *Ostrya*, *Trophis*, *Hippophae* and *Elaeagnus*; with a manuscript hint of their affinity to Order 12th.
17. *Calycanthemæ*. *Epilobium*, *Melastoma*, &c.
18. *Bicornes*. Plants whose pollen is discharged by two pores, or sometimes tubes, as *Erica*, *Vaccinium*, &c.
19. *Hesperideæ*. Myrtle tribe.
20. *Rotaceæ*. *Anagallis*, &c.
21. *Preciæ*. *Primula*, &c.
22. *Caryophylli*. Pink, Campion, &c.
23. *Tribilata*. Maple, &c.
24. *Corydalis*. *Fumaria*, &c.
25. *Putamineæ*. *Capparis*, &c.
26. *Multifiliæ*. *Helleborus*, &c.
27. *Rhæadæ*. Poppy tribe.
28. *Luridæ*. Nightshade tribe.
29. *Campanaceæ*. *Convulvulus*, *Campanula*, &c.
30. *Contortæ*. *Asclepias*, *Apocynum*, &c.
31. *Veprecula*. *Daphne* and its allies.
32. *Papilionaceæ*. Pea kind.
33. *Lomentaceæ*. *Cassia*, *Mimosa*, &c.
34. *Cucurbitaceæ*. Gourd family.
35. *Senticose*. Rose, Bramble, &c.
36. *Pomaceæ*. Apple, Plum, &c.
37. *Columnifera*. Mallow tribe.
38. *Tricocceæ*. *Euphorbia*, &c.
39. *Siliquosæ*. Cruciform plants. This order Linnæus indicates as having no relationship to any other. It constitutes the *Tetradynamia*.
40. *Perfonatæ*. Nearly equivalent to the *Didynamia Angiospermia*.
41. *Asperifoliæ*. *Myosotis*, *Borago*, &c.
42. *Verticillatæ*. Answerable to the *Didynamia Gymnospermia*, with a few ringing *Diandrous* genera.
43. *Dumosæ*. *Rhamnus*, *Euonymus*, *Ilex*, *Viburnum*, &c., an assemblage with which Linnæus himself declares his dissatisfaction.
44. *Sepiariæ*. The Jasmine tribe.
45. *Umbellatæ*. Umbelliferous plants, properly so called, as Hemlock, Parsley, &c.
46. *Hederaceæ*. Ivy and its allies, including *Vitis*.
47. *Stellatæ*. *Galium*, *Madder*, &c.
48. *Aggregatæ*. Compound flowers with separate anthers, as *Scabiosa*, *Protea*, with some of their supposed allies.
49. *Compositæ*. The great family of compound flowers with combined anthers; divided into *capitatæ*, as the Thistle: *semistylculosæ*—Dandelion: *discoideæ*—Tansy, Aster, &c.: *oppositifoliæ*—Sunflowers: and *nucamentaceæ*—Wormwood, *Parthenium*, *Xanthium*, &c. Some of this section have male flowers with distinct anthers, separate from the female. *Gnaphalium* and *Xeranthemum* are removed hither in the Linnæan manuscripts.
50. *Amentaceæ*. Willow, Oak, &c.
51. *Conifera*. Fir, Juniper, &c.
52. *Coadunatæ*. *Magnolia*, &c.
53. *Scabridæ*. Nettle, Fig, &c.
54. *Miscellaneæ*, a heterogeneous assemblage, latterly much diminished. See MISCELLANÆ.
55. *Filices*. Ferns.
56. *Musci*. Mosses.
57. *Algæ*. Sea-weeds, Lichens, &c.
58. *Fungi*. The Fungus tribe.

At the end is a large list of genera, which Linnæus found himself unable to refer to any of his orders, chiefly for want of sufficient materials to judge by. These are now, most

of them, better understood, and easily reducible to some one or other of the foregoing tribes.

The *Prælectiones*, published by Professor Giseke as above mentioned, are an ample commentary on the arrangement we have just displayed, with much supplementary matter from the editor. The whole abounds with information, but is not without many errors and misconceptions, readily detected in the present more advanced state of this branch of the science, though very excusable when written. There is moreover, in this department, much room for hypothesis and fancy, so that various opinions are held by equally competent judges, and each has its day, like theories in medicine or chemistry, the science of natural classification being as yet very much in its infancy.

The great facility of the artificial, or sexual, system of Linnæus, which has made some of the best botanists the world ever saw, seems to have taken off the attention of most of his pupils from the study of natural orders. This has been a misfortune, inasmuch as it has rendered them less competent to judge of natural genera, a talent only to be acquired by a critical observation of the principles of natural arrangement. It might seem invidious to point out the numerous examples of the defect alluded to, but the writer of this may be allowed to mention himself. He is well aware that a previous attention to natural orders, would greatly have lessened the labour and perplexity of studying genera, and though it happens that those he has founded have not been disputed, it is by the system of Jussieu they must be tried. Whatever science may be imbibed in a practical familiarity with the artificial system, and with the inimitable technical style of its author, displayed in his generic and specific definitions, the study of that system alone could hardly, at this time of day, lead to the establishment of any new genus with certainty, except in some particular classes and orders.

The diffidence of Linnæus as to attempting definitions of his natural orders, was by no means the character of the French school of botany, which arose in opposition to him. The system of the great and excellent Tournefort being found little capable of sustaining itself, against the overwhelming abundance of new acquisitions, and against the brilliant light, dawning from the north, which shewed but too clearly the imperfections of this and all other systems that had been contrived, had no chance of being defended in opposition to its rival. Vaillant was never forgiven for having even supposed it could be amended, and especially for having, by his assertion of the sexual doctrine, contributed to lay the foundation of a rival school.

Bernard de Jussieu indeed, the father of the French botanists in this department, possessed all the caution and diffidence of a man, who knew too much to be ignorant of the difficulties of his enterprise. He was, moreover, aware of the merits of Linnæus, and disposed to allow them. Though he had for many years studied the subject, and been widely conversant with the vegetable kingdom, it was not before the year 1759, when he was called upon, as Professor of Botany, to arrange the royal garden at Trianon, that he ventured to give any publicity to the natural system he had so long been projecting. What this was may be seen by his learned nephew's *Genera Plantarum*, so often quoted by us.

Adanson meanwhile, a genius of a more excentric and intrepid kind, having, as he tells us, during his herborizations at Senegal, found the insufficiency of the systems of Tournefort and Linnæus, gave himself to the study of natural arrangement. Having conceived that Linnæus slighted his correspondence, his ardent mind, stimulated by vanity and ambition,



ambition, assumed an air of petulant hostility to that great man. An inherent love of paradox and affectation, prompted him, in the first place, to exalt the artificial system of Tournefort as such, above that of Linnæus, whose whole plan of botanical study and instruction, whether with regard to principles or execution, science or nomenclature, he studiously, and without any reserve, contemns and vilifies. Assertions cost him nothing. He speaks of Ray as a judicious compiler, but no great botanist; and as if neither Linnæus nor any one else had attempted any thing on the subject, this vivacious Frenchman brings forward his own natural system, with an easy grace, not as a modest or imperfect essay, but as an original and complete performance, calculated "to supersede all other systems, as comprehending the sum of all botanical knowledge." It belongs not to us to criticise his novel plan of orthography, which his countrymen have passed over in silent disdain; but we may complain of the additional difficulty, which arises from his arbitrary plan of nomenclature, which defies all precedent and authority, except what is inconvenient and absurd. Were it not for these contemptible airs and prejudices, the learning, penetration, and ingenuity of Adanson, would long ago have procured him that distinguished rank amongst systematic botanists, to which he is doubtless entitled. His book abounds with original and instructive remarks, but his system, formed on technical characters, must necessarily be so far artificial, though it preserves abundance of natural combinations. By a singular but casual coincidence, it consists, like the fragments of Linnæus, of 58 orders, or, as the author terms them, families. These are given as mere lines of separation, subdivided into 1615 subordinate or secondary divisions, equivalent to genera, embracing 18,000 known species or varieties. The first are named in French, generally from the leading genus of each; as *Liliacées*, *Salikaires*, or from the leading character, as *Labiées*, *Légumineuses*. They profess to be disposed in a natural series, and form a table where their distinctive characters range under the following heads.

1. Name of each family.
2. Leaves, their form and situation; stipules, tendrils, stalks, &c.
3. Sex of the flowers.
4. Flowers, their situation with respect to the ovary, (that is, whether above or below the germen.)
5. Corolla, its figure and situation.
6. Stamens, their number, situation, and disk, (or what Linnæus terms the receptacle of the flower.)
7. Ovaries, (germens,) their number and disk.
8. Seeds, their number and situation.

Let any unprejudiced observer see how much of this is taken from even the artificial system of Linnæus, and judge whether the main difference, of the leading characters being derived from the herbage instead of the fructification, be an advantage in favour of Adanson or not. Those who wish for an idea of his nomenclature and orthography, may take the first section of his *Gramens*, which he calls *alpistes*, and make it out as they can.—*Kornukopia*, *Nardus*, *Mibora*, *Sabfab*, *Kapriola*, *Nazia*, *Falaris*, *Stelefuros*, *Abola*, *Vilfa*, *Kalamagrostis*, *Apera*, *Valota*, *Stipa*, *Kielboul*.

With far other aim and pretensions, the learned Antony de Jussieu ventured to publish, in 1789, his late uncle's system, in the form of a *Genera Plantarum, secundum Ordines Naturales disposita*. In this work the classes, amounting to 15, embracing 100 orders, are very neatly distinguished; first by the number of Cotyledons (real or supposed); next the number of petals; and finally the insertion of the stamens or corolla. This is either *hypogynous* (below the germen); *perigynous*, (into the calyx or corolla, which surrounds the germen, being itself inserted beneath that part); or *epigynous*, (above the germen.) This agrees with the idea, long before published, as we have mentioned, by Linnæus, of the great importance of *insertion*, or the situation of parts with respect to each other, in forming the outline of a natural system. The classes of Jussieu form the following table.

Cotyledons wanting																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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The orders, mostly named from some leading genus, stand as follows.

CLASS 1.	8. <i>Typha</i> .
1. <i>Fungi</i> .	9. <i>Cyperoidææ</i> .
2. <i>Algæ</i> .	10. <i>Gramineæ</i> .
3. <i>Hepaticæ</i> .	
4. <i>Musci</i> .	CLASS 3.
5. <i>Filices</i> .	11. <i>Palmeæ</i> .
6. <i>Naiades</i> .	12. <i>Asparagi</i> .
	13. <i>Junci</i> .
CLASS 2.	14. <i>Lilia</i> .
7. <i>Aroidææ</i> .	15. <i>Bromeliææ</i> .

16. *Asphodeli*.
17. *Narcissi*.
18. *Irides*.

- CLASS 4.
19. *Muscæ*.
  20. *Cannæ*.
  21. *Orchideæ*.
  22. *Hydrocharides*.

- CLASS 5.
23. *Aristolochia*.

## CLASS 6.

24. *Eleagni*.
25. *Thymeleææ*.
26. *Proteææ*.
27. *Lauri*.
28. *Polygoneææ*.
29. *Atriplices*.

## CLASS 7.

30. *Amaranthi*.
31. *Plantaginææ*.
32. *Nyctagines*.



33. *Plumbagines.*

## CLASS 8.

34. *Lyfimachie.*  
 35. *Pedicularis.*  
 36. *Acanthi.*  
 37. *Jasminæ.*  
 38. *Vitices.*  
 39. *Labiata.*  
 40. *Scrophularia.*  
 41. *Solaneæ.*  
 42. *Borraginæ.*  
 43. *Convolvuli.*  
 44. *Polemonia.*  
 45. *Bignoniæ.*  
 46. *Gentianæ.*  
 47. *Apocinæ.*  
 48. *Sapoteæ.*

## CLASS 9.

49. *Guaiacana.*  
 50. *Rhododendra.*  
 51. *Ericæ.*  
 52. *Campanulaceæ.*

## CLASS 10.

53. *Cichoraceæ.*  
 54. *Cinarocephala.*  
 55. *Corymbifera.*

## CLASS 11.

56. *Dipsacæ.*  
 57. *Rubiaceæ.*  
 58. *Caprifolia.*

## CLASS 12.

59. *Araliæ.*  
 60. *Umbellifera.*

## CLASS 13.

61. *Ranunculaceæ.*  
 62. *Papaveraceæ.*

63. *Crucifera.*  
 64. *Capparides.*  
 65. *Sapindi.*  
 66. *Acera.*  
 67. *Malpighia.*  
 68. *Hyperica.*  
 69. *Guttifera.*  
 70. *Aurantia.*  
 71. *Meliæ.*  
 72. *Vites.*  
 73. *Gerania.*  
 74. *Malvaceæ.*  
 75. *Magnolæ.*  
 76. *Anonæ.*  
 77. *Menispermæ.*  
 78. *Berberides.*  
 79. *Tiliacæ.*  
 80. *Cisti.*  
 81. *Rutaceæ.*  
 82. *Caryophyllæ.*

## CLASS 14.

83. *Sempervivæ.*  
 84. *Saxifragæ.*  
 85. *Cañi.*  
 86. *Portulacææ.*  
 87. *Ficoideæ.*  
 88. *Onagræ.*  
 89. *Myrti.*  
 90. *Melastomæ.*  
 91. *Salicariæ.*  
 92. *Rosaceæ.*  
 93. *Leguminosæ.*  
 94. *Terebintaceæ.*  
 95. *Rhamni.*

## CLASS 15.

96. *Euphorbiæ.*  
 97. *Cucurbitaceæ.*  
 98. *Urticæ.*  
 99. *Amentaceæ.*  
 100. *Conifera.*

bitrary. His generic characters are of that short essential kind, adopted by Linnæus in his *Systema Vegetabilium*, and by most writers at present. They are founded solely on the parts of fructification, notices of the habit, foliage, inflorescence, &c. being very properly and commodiously, subjoined in a different printed character. Sometimes indeed Jussieu and Linnæus differ about what is inflorescence, and what a part of the flower: but these are occasional disagreements, between two great minds, contemplating the same subject under different points of view. The work of Jussieu is an admirable companion to the writings of Linnæus, supplying the defects inherent in his artificial system, and throwing a brilliant and distinct light on his details; but it is no more calculated to supersede that system, than a grammar can supersede a dictionary. Its excellent author has pursued the subject in many subsequent essays, published by the National Institute of France, in which he has carried his enquiries, respecting the structure of various seeds, to a greater extent than before, and has thence reformed the characters, or the places, of many genera. He has also somewhat changed the appellations of his orders, at least their mode of termination, reducing them to the feminine gender, and calling the *Amaranthi*, for instance, *Amaranthaceæ*; which is perhaps a more correct and unexceptionable mode of expression, and certainly preferable to the *Lilææ* and *Proteææ* of Mr. Salisbury.

This last-named botanist was the first in England who directed his attention to the system of Jussieu, and to a deep practical study of Natural Orders. On this principle he has arranged a catalogue, or *Prodromus*, of his own garden, published in 1796; except that he has taken his primary divisions from the artificial system of Linnæus, which are founded solely on the number of stamens. This writer has prudently abstained, like Linnæus, from all definitions, or characters, of his orders. If Jussieu thought it incumbent on him to do otherwise, he has but displayed the difficulty of the enterprise, and the fallibility of human system when measured by the standard of nature. So many exceptions encumber most of his explanations, that they mean in fact little or nothing. They serve however to shew where nothing is, or can be, known or fixed, and it would be unjust to deny that they contain all the general information that is perhaps attainable.

Mr. Robert Brown in his *Prodromus* of the plants of New Holland, vol. i. published in 1810, has given fresh celebrity to the system of Jussieu, by whose leading principles that acute and learned work is arranged. In so totally new a field of observation, the principles of natural arrangement were requisite, at every step, for the patient and sagacious enquirer, and it is not to be wondered that he preferred them for the classification of his work. We hope, nevertheless, that he will hereafter, when his task is complete, favour the world with a Linnæan clue to his performance, in order to render the knowledge it contains generally accessible, and thus to unite, for the use of his countrymen, the talents of both those great leaders.

In the detail of his work, as far as is hitherto published, Mr. Brown has, in almost every instance, thrown more or less light upon the natural orders of Jussieu that fall in his way. We shall have particular occasion to shew this, when we come to treat of *ORCHIDEÆ* and *SCITAMINÆÆ*. He has, in several instances, subdivided the orders of the French author, or introduced new intermediate ones of his own. The definitions of his orders possess a clearness and precision, in our humble opinion, superior to what are found in any writer on the same subject. The inspection of the botany of a new world, as it were, in New Holland, where every thing is so different

One thousand seven hundred and fifty-four genera are arranged under these orders. One hundred and thirty-seven are subjoined, under an artificial arrangement, by their corolla, germen, styles, and number of stamens, as not being reducible, as far as the author was acquainted with them, to any of his orders. Many of them are now sufficiently known to be referred to their proper places; others will long perhaps remain uncertain at the end of any natural system, unless all the plants in the world could be laid before us at one view. Such a genius as Adanson indeed, like Hill (see our biographical article *GARDEN*), is troubled with no such uncertainties. The want of an appendix of doubtful plants, to any professedly natural system, is a sufficient test of the presumption of its author, and at once betrays the vanity of his pretensions.

In his subordinate distinctions, Jussieu recurs to the situation and direction of the embryo, as well as the absence or presence, the situation, form, and structure of the various parts of fructification; adverting also to great well-marked peculiarities in the inflorescence, foliage and habit. One of his chief singularities is his denying a corolla to his class of *Monocotyledones*, calling the integuments of the flower, whether simple, or (as they appear to us in many instances) double, by one name of calyx, which in the tribes of *Liliaceæ*, *Scitamineæ*, and *Orchideæ*, seems no less paradoxical than ar-



different from what was already familiar to this botanist in Europe, afforded him prodigious advantages as to the enlargement of his conceptions of natural affinities. Perhaps in the detail of genera, we may sometimes think he has carried his distinctions too far, and in the definitions of species, that he has been prodigal of distinctive marks, instead of resting on a few clear and sufficient ones. Every writer has a peculiar character and merits of his own, and the friend of whom we are endeavouring to speak without partiality or prejudice, has abundant merits to compensate any imperfections. He must ever rank in the first line of classical botanical authors, as a worthy pupil of Linnæus as well as of Jussieu.

The system of Jussieu has found numerous followers among his countrymen; some of whom, as Ventenat and Decandolle, have the merit of original authors, in the numerous elucidations and corrections of their great model. It would lead us too far to enlarge on this subject. The world has long been in expectation of a new edition of Jussieu's *Genera Plantarum* from himself, which, from the vast additions and improvements that it could not fail to display, must prove almost a new work, and be of the greatest use to scientific botany. The science is now so generally cultivated, and by such various hands, that it will require frequently to be brought back to order and regularity, by some competent and duly constituted authorities. S.

**NATURAL Pastures**, in *Agriculture*, such as are produced by natural grasses, in contradistinction to those formed by the artificial grasses. See PASTURE.

**NATURAL Philosophy**, that science which considers the powers of nature, the properties of natural bodies, and their mutual action on one another: this is otherwise called *physics*. See PHILOSOPHY.

**NATURAL Woods**, in *Rural Economy*, such as are raised in a natural manner, and not by planting. See WOODS.

**NATURAL**, in *Heraldry*, is used where animals, fruits, flowers, &c. are blazoned with the colours they naturally have, though different from the common colours of heraldry: and this is to prevent the armory's being accused of falsity, when blazoned with the names of colours unknown in heraldry.

**NATURAL**. This word, in *Music*, has many acceptations; as natural tones, of the human voice, in opposition to the artificial tones of instruments. A melody or air is said to be natural, when it is smooth, easy, graceful, and sometimes when it is common. Harmony is said to be natural, when not loaded with discords, or deformed by extraneous modulation; but confined to the harmony of the key. Music is likewise said to be natural, when it is clear and free from confusion, neither of difficult intonation nor execution; neither too high nor too low; too quick or too slow; nor affectedly loaded with accidental flats and sharps. The Italians always write recitative without flats or sharps at the clef; so that all the modulations are brought about by accidental flats and sharps.

**NATURAL** is also sometimes used for physical. In which latter sense, natural music is that performed by natural organs, *i. e.* vocal music; in contradistinction to artificial, or instrumental. See MUSIC.

Natural music is more peculiarly used to denote a song that proceeds in the natural order of the notes, without flats or sharps.

**NATURAL Harmony** is that produced by the natural and essential chords of the mode. See HARMONY.

**NATURAL Note** is used in opposition to flat and sharp notes, which are called *artificial notes*. See NOTE, SCALE, &c.

The natural note ♮, is used to contradict those flats and

sharps that are set at the beginning of a staff; and, in such case, you must take the natural note as it is in the gammut.

**NATURAL** is also used for something coming immediately out of the hands of nature. In which sense it stands opposed to factitious or artificial, which signifies something wrought by art.

Bishop Wilkins observes, that there appears a very great difference between natural and artificial things, when viewed with microscopes: the first ever appear adorned with all imaginable elegance and beauty; the latter, though the most curious in their kind, infinitely rude and unhewn. The finest needle appears a rough bar of iron, and the most accurate engraving, or embossment, as if done with a mattock, or trowel.

**NATURALIST**, a person who has studied nature, and is well versed in natural bodies, especially in what relates to metals, minerals, stones, vegetables, and animals.

Aristotle, Ælian, Pliny, Solinus, and Theophrastus, were the greatest naturalists among the ancients; but they fell into abundance of errors, which have been corrected by the happy industry of the moderns. Aldrovandus is the most copious, but not the most accurate, of the modern naturalists: his work is in thirteen volumes in folio. The characters and works of Linnæus are well known.

**NATURALIZATION**, in *Law*, the act of naturalizing an alien, or putting him into the condition of a natural-born subject, and intitling him to the rights and privileges of such.

In France, before the revolution, naturalization was the king's prerogative: in England, it is only done by act of parliament.

But none can be naturalized, unless they have received the sacrament within one month before the bringing in of the bill, and taken the oaths of allegiance and supremacy in the presence of the parliament. A person who is naturalized may have lands by descent, as heir at law, as well as obtain them by purchase; but he is disabled from being a member of the privy council, or parliament; or from holding offices, grants, &c. as well as a denizen, (see DENIZEN,) 7 Jac. I. cap. 2. 12 Will. III. cap. 2. No bill for naturalization can be received in either house of parliament without such disabling clause in it; nor without a clause disabling the person from obtaining any immunity in trade thereby, in any foreign country, unless he shall have resided in Britain for seven years next after the commencement of the session in which he is naturalized. (1 Geo. I. cap. 4. 14 Geo. III. cap. 84.) All children born out of the king's dominions, whose fathers were or are subjects of this kingdom at the time of their birth, are adjudged to be natural-born subjects of this realm, except children of parents attainted of treason, or that are in the actual service of a foreign prince at enmity with us. (4 Geo. II. cap. 21.) Every foreign seaman who, in time of war, serves two years on board an English ship, is, *ipso facto*, naturalized, under the like restrictions as in statute 12 Will. III. cap. 2. (13 Geo. II. cap. 3.) And all foreign Protestants and Jews, upon their residing seven years in any of the American colonies, without being absent above two months at a time, and all foreign Protestants serving two years in a military capacity there, or being three years employed in the whale fishery, without afterward absenting themselves from the king's dominions for more than one year, and none of them falling within the incapacities declared by statute 4 Geo. II. cap. 21, are, upon the taking the oaths of allegiance and abjuration, or, in some cases, an affirmation to the same effect, naturalized to all intents and purposes, as if they had been born in this kingdom; except as to sitting



ting in parliament or in the privy council, and holding offices or grants of lands, &c. and therefore are admissible to all such privileges, and no other, as Protestants or Jews born in this kingdom are entitled to.

In France, Swiss, Savoyards, and Scots, need not any naturalization; being reputed regnicoles, or natives.

**NATURALS**, *res NATURALES*, in *Medicine*. In every animal, however sick or diseased, there is still remaining some degree of life and strength; and the causes and effects of each. These are called *naturals*, natural things, or things according to nature; and sometimes barely nature; in contradistinction to *non-naturals*.

**NATURE**, *NATURA*, is a term variously used. Aristotle has a whole chapter wrote expressly to enumerate the various acceptations of the Greek word *φύσις*, rendered, in English, *nature*: and among Latin writers, the different acceptations are so many, that a certain author reckons up fourteen or fifteen. Mr. Boyle, in a precise treatise of the vulgarly received notion of nature, gives us eight principal ones.

**NATURE**, then, is sometimes used for the system of the world; the machine of the universe; or the assemblage of all created beings.

In which sense we say, the Author of nature: the sun is called the eye of nature, because he illuminates the universe; and the father of nature, because he warms the earth, and makes it fruitful. And thus we say of the phoenix, or a chimera, that there is no such thing in nature.

Instead of the word nature in this sense, Mr. Boyle, to avoid ambiguity, and abuse of the word, wishes to have *world*, or *universe*, substituted.

**NATURE**, in a more confined sense, is applied to each of the several kinds of beings, created and uncreated; spiritual and corporeal.

In which sense we say, *human nature*, meaning all men together who possess the same spiritual, reasonable soul; *angelical nature*; the *divine nature*, &c.

In this sense, the school-divines say, *natura naturans*, & *natura naturata*, speaking of God, who is the *natura naturans*, as giving being and nature to all others; in opposition to the creatures, who are the *natura naturata*, as receiving their nature from the hands of another.

**NATURE**, in a still more restrained sense, is used for the essence of a thing; or that which schoolmen call the quiddity thereof, that is, the attribute which makes it what it is.

In which sense, the Cartesians say, it is the nature of the soul to think; and that the nature of matter consists in extension.

And here the word *essence* Mr. Boyle would have obtained in lieu of *nature*.

**NATURE** is more particularly used for the established order, and course of material things; the series of second causes; or the laws which God has imposed on the motions impressed by him.

In which sense it is we say, physics is the study of nature; nature makes the night succeed the day; nature has rendered respiration necessary to life, &c.

Thus St. Thomas defines nature a kind of divine art, communicated to beings, which carry them to the end they are determined for. In which sense, nature is nothing else but that concatenation of causes and effects, or that order and economy which God has established in the parts of his creation.

In this sense, too, we say, miracles are effects above the powers of nature: art is said to force or surpass nature, by

means of machines, in regard these produce effects which exceed what we find in the common course of things.

**NATURE**, again, is taken for an aggregate of powers belonging to any body, especially a living one.

In which sense, physicians say, nature is strong, weak, or spent; or that, in such a disease, nature left to herself will perform the cure.

**NATURE** is still more strictly used for the action of Providence, the principle of all things; or that spiritual power, or being, which is diffused throughout the creation, and moves and acts in all bodies, and gives them certain properties, and produces certain effects.

In this, which Mr. Boyle considers as the most usual sense, nature is nothing else but God, acting himself, and according to certain laws he himself has fixed.

This seems pretty agreeable to the opinion of many of the ancients, who made nature the god of the universe, *To Παν*, who presides over, and governs all things; though others owned this as an imaginary being, and by nature meant no more than the qualities, or virtues, which God has given his creatures, and which their poets and orators took occasion of personifying.

F. Malebranche says, that the nature so much talked of in the schools is fit for nothing but to lead us back to idolatry; the ancient heathens hereby understanding something, which, without being God, acts continually throughout the universe.

Thus the idol nature must be an actual principle, which, in concurrence with God, is the next and immediate cause of all the changes which befall matter. Which seems to fall in with the opinion of the *anima mundi*; as if nature were a substitute of God, or a collateral cause with God, or a middle being between God and created things. See **PLASTIC**.

Aristotle defines nature, *principium & causa motus & ejus in quo est primo per se, & non per accidens*: a definition so obscure, that none of his commentators, with all their glosses, have been able to render it intelligible.

This principle, which the Peripatetics call nature, they supposed to act necessarily; and to be therefore destitute of knowledge, or liberty. See **NECESSITY**.

Thus, also, the Stoics conceived nature as a certain spirit or virtue diffused throughout the universe, which gave every thing its motion; so that all must be dragged away by the invariable order of a blind nature, and an inevitable necessity.

In speaking of the action of nature no more is to be understood, but that bodies act on one another, in a manner agreeable to the general laws of motion which the Creator has established.

In this lies the mystery of that great word, which is only a compendious way of expressing the action of all bodies: but the mechanism of bodies would, perhaps, better express what is here meant by nature.

Some, Mr. Boyle observes, will have the nature of a thing to be only the law that it receives from the Creator, and according to which it acts on all occasions. But this is an improper and figurative expression.

The same author proposes a notion of nature as more fit than any yet given, to pass from the principal one of nature; with regard to which many axioms and expressions relating to that word may be conveniently understood. In order to this, he distinguishes between *general* and *particular* nature.

*General* nature, he defines the aggregate of the bodies which make up the world in its present state, considered as a principle by virtue whereof they act and suffer, according



to the laws of motion prescribed by the Author of all things.

*Particular nature*, of any subordinate, or individual, consists in the general nature applied to a distinct portion of the universe. Or, it is a convention of the mechanical properties (as magnitude, figure, order, situation, and local motion) of parts convenient and sufficient to constitute, or intitle to its particular species or denomination, the particular body they make up; the concurrence of all these being considered as the principle of motion, rest, &c.

NATURE, *Guardians by*, in *Law*. See *GUARDIAN*.

NATURE, *Law of*. See *LAW*.

NATURE, *Laws of*, are axioms, or general rules, of motion, and rest, observed by natural bodies in their actions on one another; and in all the changes which befall them in their natural state.

The laws of nature, and of motion, are, in effect, the same: custom, indeed, has made some difference; and we find authors call the particular cases of motion, laws of motion: which see under *MOTION*. The more general, and comprehensive ones, and those from which, as from axioms, the others are deduced, they call laws of nature.

Of these, Sir Isaac Newton has established three:

1. That every body perseveres in the same state, either of rest, or uniform rectilinear motion; except so far as it is forced to change that state by some foreign force.

Thus projectiles persevere in their motions, except so far as they are retarded by the resistance of the air, and gravity: and thus a top, whose parts, by their cohesion, are continually drawing one another out of their rectilinear motion, only ceases to run round because resisted by the air, and the friction of the plane on which it moves. And thus the larger bodies of the planets and comets preserve their progressive and circular motions a long time undiminished, in regions void of all sensible resistance. As body is passive in receiving its motion, and the direction of its motion, so it retains them or perseveres in them, without any change, till it be acted upon by something external. See *VIS INERTIA*, *RESISTANCE*, and *MEDIUM*.

2. The change of motion is ever proportional to the moving force whereby it is effected, and in the direction of the right line wherein that force is impressed.

If a certain force produce a certain motion, a double force will produce double the motion; a triple force triple the motion; whether it be impressed all at once, or successively, and by degrees. And this motion (since it is ever directed to the same point with the generating force), if the body were in motion before, is either to be added to it, as where the motions conspire; or subtracted from it, as where contrary; or added obliquely, as where oblique: and is compounded with it, according to the determinations of each.

3. Re-action is always contrary and equal to action; or the actions of two bodies upon one another are always mutually equal, and directed contrary ways; and are to be estimated always in the same right line.

Whatever presses or pulls another, is equally pressed or pulled thereby. Thus, if I press a stone with my finger, the finger is equally pressed by the stone: if a horse draw a weight by a rope, the horse is equally drawn back towards the weight; for the rope being equally stretched each way, will, with an equal endeavour to relax itself, drive the horse toward the stone, and the stone toward the horse; and will hinder the progress of the one, as much as it promotes that of the other.

Again, if any body, by striking on another, do in any manner change its motion, it will itself, by means of the

other, undergo also an equal change in its own motion, by reason of the equality of the pressure.

When two bodies meet, each endeavours to persevere in its state, and resist any change: and because the change which is produced in either may be equally measured by the action which it excites upon the other, or by the resistance which it meets with from it, it follows that the changes produced in the motions of each are equal, but are made in contrary directions. The one acquires no new force but what the other loses in the same direction; nor does this last lose any force but what the other acquires: and hence, though by their collisions, motion passes from the one to the other, yet the sum of their motions, estimated in a given direction, is preserved the same, and is unalterable by their mutual actions upon each other.

In these actions the changes are equal; not those, we mean, of the velocities, but those of the motions, the bodies being supposed free from any other impediments. For the changes of velocities, which are likewise made contrary ways, inasmuch as the motions are equally changed, are reciprocally proportional to the bodies.

This law also obtains in attractions. See *ATTRACTION*.

NATURE, in *Mythology*, is used by the poets sometimes for the mother, sometimes for the daughter, and at other times for the companion of Jupiter. She is described by the symbols of the Diana of Ephefus.

NATURE, in *Prosody*. A syllable is said to be long or short by nature, to signify that it is so originally, and independently of any rule of grammar, which might render it so by position or otherwise.

NAVA, in *Geography*, a town of Italy, in the department of the Mela; 5 miles N. of Bressia.

NAVA, *La*, a town of Spain, in the province of Leon; 22 miles S.W. of Valladolid.

NAVACE, *LA*, a small island in the West Indies, between Jamaica and Hispaniola. N. lat.  $18^{\circ} 23'$ . W. long.  $74^{\circ} 50'$ .

NAVACOTTA, a town of Lamjung; 150 miles N. of Fyzabad. N. lat.  $28^{\circ} 56'$ . E. long.  $83^{\circ} 36'$ .

NAVAGERO, ANDREA, in *Biography*, an eminent Italian poet and orator, was born at Venice, of a patrician family, in 1483. He was educated under Antonio Sabellico, and from an early age displayed very extraordinary powers of memory, and a decided turn for literary pursuits. He repaired to Padua, where he studied the Greek language with great assiduity under Musuro, and philosophy under Pomponazzi. In that university he formed connections with the celebrated Bembo, Contarini, Fracastorio, Torriano, and other distinguished characters, which continued unbroken through life. After this he spent some time at Pordanone, where the celebrated general Alviano had founded a literary academy; and then returned to Venice, and became a supporter of the learned labours of Aldo Manuzio, whom he assisted in the collection and examination of manuscripts, for the purpose of giving correct editions of the ancient writers. He was, on account of his eloquence, selected to recite the funeral orations of Alviano, the doge Loredano, and Catharina Cornara, queen of Cyprus. He was afterwards appointed keeper of the library of cardinal Bessarion, and historiographer to the state. In the spring of 1525, he was sent to Spain on an embassy, where he remained about three years, when he set out on his return. Soon after his arrival at Venice, he was sent to France on an embassy, for the purpose of inviting Francis to return to Italy, to balance the power of the emperor. He had reached Blois, when he was attacked with a fever, which carried



carried him off in May 1529, at the age of 46. He was reckoned among the most polished writers of his time; and in Latin poetry he was distinguished by elegance, grace, and a kind of Grecian simplicity that denoted great purity of taste. His funeral orations are rather elegant and methodical discourses, than striking pieces of eloquence. His letters from Spain to Remusio exhibit him as a minute observer of every thing curious presented by a foreign country, and as an antiquary and geographer. Soon after his decease, his funeral orations for Alviano and Loredano, and his Latin poems, were published, which were his only memorials till the year 1718, when the brothers Volpi published, at the Cominian press in Padua, a quarto volume, containing, with those pieces, all the works of Navagero that could be collected; to which was prefixed a life of the author, by Giannantino Volpi.

NAVAGERO, BERNARD, an eminent cardinal in the 16<sup>th</sup> century, of the same family as the preceding, was born at Venice in 1507. He became distinguished for his talents as a man of business, and for great powers of eloquence, and was employed in the service of the republic. He was sent syndic to Dalmatia, appointed daily at Constantinople, and afterwards nominated ambassador to Rome, to France, and to the court of the emperor. He was devoted to the pursuits of literature, and scarcely quitted his study but to render services to his country. In 1561, pope Pius V. created him a member of the sacred college, and promoted him to the bishopric of Verona. After this, the pope sent him as his legate to the council of Trent. He died in 1565, and was author of some Harangues, and of "The Life of pope Paul IV." Moreri.

NAVAGIUM, in our *Old Writers*, a duty incumbent on tenants to carry their lord's goods in a ship. "Liberi sint ab omni carriagia, navagio, &c."

NAVAL, something relating to *ships*, or *navigation*; which see.

NAVAL *Architecture*. See SHIPBUILDING.

NAVAL *Camp*, in *Antiquity*, a fortification consisting of a ditch and parapet on the land side, or a wall constructed in the form of a semicircle, and extended from one point of the sea to another. It was sometimes defended with towers, and beautified with gates, through which they issued forth to attack their enemies. Homer hath left us a remarkable description of the Grecian fortifications of this sort, in the Trojan war, beginning at v. 436. *Iliad* n.

"Then, to secure the camp and naval powers,  
They rais'd embattled walls with lofty tow'rs:  
From space to space were ample gates around,  
For passing chariots; and a trench profound,  
Of large extent; and deep in earth below  
Strong piles infix'd stood adverse to the foe."

Pope's Transl.

Towards the sea, or within it, they fixed great pales of wood, like those in their artificial harbours; before these the vessels of burden were placed in such order, as that they might be instead of a wall, and give protection to those within; in which manner Nicias is reported by Thucydides to have encamped himself: but this seems only to have been practised when the enemy was thought superior in strength, and raised great apprehensions of danger in them. When their fortifications were thought strong enough to defend them from the assaults of enemies, it was frequent to drag their ships to shore, which the Greeks called *εναλκειν*, the Romans *subducere*. Around the ships the soldiers disposed their tents, as appears every where in Homer: but this seems only to have been practised in winter, when their

enemy's fleet was laid up, and could not assault them; or in long sieges, and when they lay in no danger from their enemies by sea; as in the Trojan war, where the defenders of Troy never once attempted to encounter the Grecians in a sea-fight.

The adjacent places were usually filled with inns and stews, well stocked with females, that prostituted themselves to the mariners, merchants, and artificers of all sorts, who flocked thither in great numbers. This, however, appears to have happened only in times of peace.

NAVAL *Crown*, *Corona Navalis*, among the ancient Romans, a crown adorned with figures of prows of ships, conferred on persons who, in sea engagements, first boarded the enemy's vessel.

Though A. Gellius seems to speak in the general, where he says the naval crown was adorned with prows of ships, Lipsius distinguishes two kinds of naval crowns; the one he calls *simple*, the other *rostrated*.

The first he supposes plain, and given to the common soldiers, &c. The latter, much more glorious, adorned with prows of ships, and only given to generals, or admirals, who had gained some important victory at sea. See CROWN.

NAVAL *Engagement*. See ENGAGEMENT.

NAVAL *Stores*, comprehend all those particulars made use of, not only in the royal navy, but in every other kind of navigation: as timber and iron for shipping, pitch, tar, hemp, cordage, sail-cloth, gun-powder, ordnance, and fire-arms of every sort, ship-chandlery-wares, &c.

Persons stealing or embezzling any of the king's naval stores to the value of 20s. are guilty of felony, without benefit of clergy. (31 Eliz. c. 4. 22 Car. II. c. 5.) And the treasurer, comptroller, surveyor, clerk of the acts, or any commissioner of the navy, may act as justices, in causing the offenders to be apprehended, committed, and prosecuted for the same. (9 Geo. III. c. 30.) And the treasurer and commissioners of the navy are empowered to inquire of naval stores embezzled, and appoint persons to search for them, &c. who may go on board ships, and seize such stores; and the commissioners, &c. may imprison the offenders, and fine them double value, the stores being under the value of 20s. (1 Geo. I. c. 25.) None but the contractors with the commissioners of the navy shall make any stores of war, naval stores, &c. with the marks commonly used to his majesty's stores, upon pain of forfeiting the same and 200l. And persons in whose custody such stores shall be found concealed, are liable to the same penalty. 9 & 10 Will. III. c. 41.

By 39 & 40 Geo. III. c. 89, persons, other than contractors, receiving or having stores of war in their possession, shall, on conviction, be transported for 14 years, unless upon trial they shall produce a certificate, under the hands of three commissioners of the navy, expressing the number, quantity, or weight of such stores, and the manner of the same coming into their possession. Persons convicted of offences against the statute 9 & 10 Will. III., besides forfeiting such stores and the sum of 200l., shall be punished by pillory, whipping, and imprisonment, &c. If any person shall, either in this kingdom, or in any place belonging to it, burn or destroy naval, &c. stores, or any place where they are kept, he, and also his aiders and abettors, shall be guilty of felony, without benefit of clergy. 12 Geo. III. c. 24. See *Art of NAVIGATION*.

NAVAL *Tactics*. See TACTICS.

NAVALCARNERO, in *Geography*, a town of Spain, in Old Castile; 42 miles S. of Segovia.

NAVALIA,



**NAVALIA**, among the Romans, were docks or ports where ships used to be laid up after building.

**NAVALIA** likewise signified the wharfs or keys at Rome, where the ships used to load and unload their goods, all which were near the Sublician bridge.

**NAVALPERA**, in *Geography*, a town of Hindoostan, in Baglana; 45 miles E. of Basseen.

**NAVAMORQUENDA**, a town of Spain, in Old Castile; 37 miles S. of Avila.

**NAVAN**, a post-town of Ireland, in the county of Meath, situated on the river Boyne. Navan was an ancient palatinate, and in former ages was high in repute. It is beautifully situated, but very ill built: it has, however, been rapidly increasing in wealth and extent, and is much served by the Boyne having been rendered navigable to it. Its population was, many years ago, estimated at 4000, and must have considerably increased: it is, according to Mr. Wakefield, chiefly Roman Catholic. The manufacture of sacking employs near 300 looms; here are likewise very extensive flour, cotton, and paper mills, a brewery, a distillery, with other manufactures incident to the situation and trade of the place. A good cattle fair is held four times in the year, and there is also a weekly market, which stands unrivalled in the county for live-stock, bacon, hogs, butter, and every variety of rural produce, besides coarse linen, friezes, and yarn. Mr. Wakefield speaks of the wheat in this neighbourhood as excellent, but condemns the exhausting system that is pursued. The commons of Navan are very large, and very badly regulated, so that they are a public nuisance, by affording support to a number of unprincipled vagabonds. Navan has another nuisance, now, however, in a fair way of being removed by the legislature; a schoolmaster enjoying a large revenue, without making any return. The lands of the endowed school of this place are said to let for near 1500*l.* a-year, which income was converted into a sinecure; but the commissioners appointed to investigate the state of public schools in Ireland, on the motion of sir John Newport, bart., having exposed this and many similar abuses, measures have been taken to render the schools effective and useful. Navan is 24 miles N. by W. from Dublin.

**NAVAPOUR**, a town of Hindoostan, in Canara; 15 miles S.E. of Barcelore.

**NAVARDUN**, a town of Spain, in Aragon; 27 miles W. of Jaca.

**NAVAREDONDA**, a town of Spain, in the province of Leon; 50 miles E.S.E. of Ciudad Rodrigo.—Also, a town of Spain, in Leon; 21 miles E. of Ciudad Rodrigo.

**NAVARETTA**, a town of Spain, in Old Castile, seated on a mountain; 9 miles W. of Logroño.

**NAVARETTE**, FERNANDEZ, in *Biography*, was a missionary of the order of St. Dominic, in Spain, who flourished in the early part and middle of the 17th century. When he had filled some distinguished stations in his order, he, in 1646, left Spain for the purpose of promulgating the Christian faith in China. He went by way of America, where he was detained a considerable time, and did not arrive at the Philippine islands till 1648. He was appointed professor of theology at Manilla, and was busily employed in making proselytes in those islands, and at Macassar, and at length reached China in 1659. He applied with so much assiduity to the language, that he was soon able to speak and write it with great facility. In 1665 he was chief of the mission in the province of Che-kiang, when a persecution was excited in consequence of the “Ephemerides” of father Adam, a Jesuit; and the missionaries had orders to repair to Peking, whence they were sent to Canton, with

permission to leave the empire. Navarette did not arrive at Madrid till 1672. He, soon after this, went to Rome, where he gave an account of the manner in which he had accomplished the objects of his mission. This did him so much credit, that he had the offer of returning thither with the episcopal dignity. This honour he declined, and in 1678 was consecrated archbishop of St. Domingo; and in the possession of this see he died in 1689. He wrote an account of his travels in three volumes, of which the first appeared at Madrid in 1676. It has been esteemed one of the most faithful and curious accounts of that country, and has been given in our language in Churchill’s “Collection.” The second volume, while in the press, was suppressed by that curse of man, the *Inquisition*, which, to the joy of every feeling and virtuous mind, has been within these few weeks (February 1813) abolished in Spain, and we trust eradicated for ever from the world. It is not known what became of the manuscript of the third volume. Moreri.

**NAVARIN**, in *Geography*, a sea-port town on the west coast of the Morea, on the gulf of Zonchio: its harbour is large, and is the most frequented in the Morea. The town is fortified and defended with a citadel; 88 miles S.W. of Corinth. N. lat. 37° 5'. E. long. 21° 25'.

**NAVARRÉ**, PETER, in *Biography*, a celebrated warrior in the 16th century, was born in Biscay. He was brought up to the sea-service, but after a time engaged himself as valet to the cardinal Aragon, and then served in the army of the Florentines. He was next employed by Gonzalvo de Cordova in the Neapolitan wars, as captain; and he contributed very much to the capture of Naples. On account of his good conduct, the emperor gave him large domains in Naples, from which he assumed the name of Navarre. He afterwards sailed against the Moors in Africa, and took possession of Oran, Tripoli, and other places. His campaigns in Italy after this were unfortunate, and he was taken at the battle of Ravenna, 1512. Upon his liberation, thinking himself ill treated by the Spanish king, he determined to enter into the service of Francis I. In his attempt to relieve Genoa, he was taken by the imperial troops; and for the space of three years languished in the dungeons of Œuf, till the treaty of Madrid set him free. He was taken prisoner at the retreat of Aversa, and again sent to the dungeon of Œuf. Here his life was spared by the duke of Orange, in compassion for his misfortunes and his valour. He died soon after, though it was asserted that he was strangled in his bed.

**NAVARRÉ**, in *Geography*, a province of Spain, which was anciently a kingdom, situated in the north of Spain, and shut in between the Pyrenees, Aragon, Old Castile, and Biscay. Its figure is an irregular quadrilateral; its mean length from east to west is 18 leagues, and its mean breadth from north to south 14. On the east and south it is bounded by Aragon, on the south-west by Old Castile, on the north-west by Biscay, and on the north by French or Lower Navarre. This country abounds in steep mountains, intermixed with vallies, and some small plains, which are very fertile. The mountains are part of the Pyrenees, forming the western extremity of that grand chain; and the principal vallies are those of Roncevaux, Lescou, Bañan, and Roncal. Navarre is watered by the Ebro, and eight small rivers. It has two bishoprics, one at Pampeluna, the other at Tudela; two cathedral chapters, five collegiate chapters, 753 parishes, 70 religious houses, 12 hospitals, two asylums, a grand military government under the administration of a viceroy, a particular military government, a royal council, a chamber of accounts, an university, four colleges for the education



education of youth, nine cities, 154 towns, and 638 villages. Its capital is *Pampeluna*; which see. Navarre was formerly very populous, but towards the end of the 16th century there was a considerable emigration of its inhabitants, who removed into the province of France, which took its name. According to the enumeration of the years 1787 and 1788, the number of inhabitants ought to be now 287,382; in which number are reckoned 753 parish priests, 1166 secular priests, 1120 monks, 510 nuns, 13,054 nobles, 172 writers, 1163 students, and 9910 servants. The country is mountainous and cold; the mountains are very lofty, and frequently steep, generally presenting to the view bare rocks. However, it has some considerable forests, and excellent pastures; and in some districts, the air is milder and more salubrious than in the neighbouring provinces of Spain. The fertile soil, capable of culture, is restricted to a certain number of vallies, and some hills and plains; and of course its productions are not sufficient for supplying the wants of its inhabitants. It yields wheat, rye, barley, maize, wine, a small quantity of oil, fruits, and pulse. The lands, that are of the best quality, are not rendered so productive as they might be made. The territory of Tudela is adapted to all sorts of tillage; it produces wheat, olives, barley, beans, excellent fruits, and hemp; but every thing is neglected for the sake of the cultivation of the vine. Among the wines of Navarre those that are most distinguished are the wines of Tudela, resembling that of Burgundy, and those of Peralta, which are rich, and made with the grape called Berbes, and in colour like that of Sherry. Cyder is made in some of the vallies; the best being supplied by that of Bañau. The lands in the district of Pampeluna are well manured, and the crops are changed alternately for four years in the following order, *viz.* wheat, beans, wheat, maize; so that the ground never lies fallow. The manufactures of Navarre have never been considerable. Of brandy there are some distilleries at Estella, Fuente de la Reyna, and Sangüesa. Cloth manufactories are not so unfrequently met with at Tudela as in other towns. At Tudela there are six soap manufactories, and others of tiles, bricks, and pottery. Estella has some looms of coarse woollens. One league from Eguy there is a manufactory of cast-iron, bombs, and balls, on the king's account; and the town of Corella, containing about 4000 inhabitants, has a manufactory of liquorice juice, which is extracted from the wood of this tree, of which they make a substance: this is exported in great quantities to the north of Europe, and is called with us Spanish liquorice. The commerce of Navarre is entirely confined to imports. Of late the roads, which were formerly impediments to trade, have been improved; and the rivers Ebro and Bidazao afford an easy communication, of which the inhabitants might avail themselves as an incentive to industry and activity. Iron mines in this province are rather abundant. Near Pampeluna there is a copper mine, which was worked about the middle of the 18th century. On the ground near Valtierra is a mine of white rock salt, which is very abundant, in layers of gypsum: the interior of this mine resembles an ancient church in the Gothic style. The mountains supply plenty of game, hares, roebucks, foxes, wolves, wild bears, &c. This province has various mineral waters. The arts and sciences have been but little cultivated in Navarre; and it has furnished few writers of any note. As to the disposition and character of the inhabitants, they are generally serious, reserved, proud, and brave; nimble in running, excellent leapers, and expert players at tennis. They are reproached with being obstinate, opinionated, indocile, imperious, quarrelsome, and violent; but, on the other hand, they are allowed to be

witty, acute, ingenious, and laborious. They seem to have readily adopted the French manners; and their dress or costume is nearly the same with that of the Castilians. The language of Navarre is the Castilian, altered by a mixture of Biscayan, Catalan, and French.

As to the history of Navarre, we observe that in the fifth century, this province was free from the yoke which the Alani, Suevi, and Vandals had imposed upon the two Castiles, Galicia, Asturias, and Andalusia. In the year 470 or 472, Euric or Evaric, a Gothic king, who is said to have first given written laws to the Goths of Spain, took possession of Pampeluna and the surrounding country, the inhabitants of which were Roman Catholics. At first the Goths manifested a spirit of toleration; but they afterwards exercised unwarrantable despotism; till at length the people of Navarre and the neighbouring countries resolved to defend the faith to which they were attached, and caused an insurrection in 581 against Leudivigilde, the Gothic king; but they were subdued by this barbarous prince, and many of them, called Vascones, passed over the Pyrenees, and settled in the territory which from these new occupiers was denominated Gascony. Navarre was afterwards possessed by the Moors until the year 806, when they were expelled by Louis, king of Aquitania, the son of Charlemagne; and from that period this country put itself under the protection of the French empire. In 832 Aznar, having been ill treated by Pepin, king of Aquitania, formed a party and took possession of Navarre, causing himself to be declared count. After his death, a count of Bigorre became the founder of a monarchy, which continued in his house for 500 years. In 1512 the kingdom of Navarre was dismembered. Its legitimate sovereigns were then confined to that part situated on the French side of the Pyrenees, and called Lower Navarre, and which was united to the crown of France by Henry IV. That part which has been subject to the kings of Spain, has still preserved the ancient form of its government and constitution. It is governed by a viceroy. The courts, in their form, powers, and legal proceedings, differ entirely from those of Spain. It is not only governed by its ancient laws, civil and criminal, but has preserved its own states, composed of the three orders, the clergy, the nobility, and the deputations of towns. The ancient money has also been preserved, *viz.* le cornado (half a maravedis), lo charo (two maravedis), and le gros (six maravedis), which are fractions of pence; la tarja or eight maravedis; and 4½ tarjas, equal one real of vellon, or 2½d. Navarre also maintains the privilege of receiving the greater part of foreign merchandize without search or duty; nor is it subject to the customs, except when they leave Navarre for Old Castile; the first custom-house is at Agreda.

Louis, king of Aquitania, divided Navarre into five counties, which divisions still exist under the name of "Merindades;" of which the chief places are Pampeluna, the capital, Estella, Tudela, Sangüesa, and Olita. Laborde's View of Spain, vol. ii.

NAVARRÉ, *Lower*, a province of France, which now forms the department of the Lower Pyrenees.

NAVARRÉ, *New*, a province of New Mexico, on the N.E. side of the gulf of California, which separates it from the peninsula of California on the S.W. It is bounded on the N. by a country unknown, on the E. by New Mexico Proper and New Biscay, on the S. by Culiacan, and on the W. by the gulf of California. The chief Spanish town is St. Juan Cinaloa.

NAVARRÉINS, a town of France, in the department of the Lower Pyrenees; and chief place of a canton, in the



the district of Orthés; 10 miles N.W. of Oleron. The place contains 1300, and the canton 11,044 inhabitants, on a territory of 155 kilometres, in 27 communes.

NAVARU, a town of Hindoostan, in Vissapour; 16 miles E.N.E. of Vissapour.

NAVAS *del Marques, Las*, a town of Spain, in New Castile; 15 miles W. of Escorial.

NAVASIA, a small island in the Windward passage, or strait between Cuba and Hispaniola, whither the inhabitants of Jamaica resort to kill guaras, a kind of lizard, whose flesh is firm and white, and said by seamen to make good broth.

NAVASQUE, a town of Spain, in Navarre; 22 miles S.E. of Pampeluna.

NAVATIR, a town of Arabia Petrea; 18 miles E.S.E. of Adjerud.

NAVAZZA. See *La NAVACE*.

NAUCELLE, a town of France, in the department of the Aveyron, and chief place of a canton, in the district of Rodés; two miles S.E. of Sauveterre. The place contains 867, and the canton 6533 inhabitants, on a territory of 207½ kilometres, in 20 communes.

NAUCLEA, in *Botany*, probably from *ναυς*, a ship or bark, and *κλυω*, to enclose or shut up, because the seed, or more properly the half capsule, is shaped like the hull of a vessel, and contains the kernels in its cavity. Linnæus, the author of the name, has not given its derivation, nor has Professor Martyn attempted any explanation. Linn. Gen. 90. Schreb. 119. Willd. Sp. Pl. v. 1. 928. Mart. Mill. Dict. v. 3. Juss. 209. Lamarck Illustr. t. 153. Gærtn. t. 30. (Uncaria; Schreb. 125. 822. Ourouparia; Aubl. Guian. v. 1. 177. t. 68.)—Class and order, *Pentandria Monogynia*. Nat. Ord. *Aggregate*, Linn. *Rubiaceæ*, Juss.

Gen. Ch. *Common Calyx* none. *Common Receptacle* globose, somewhat villous, entirely covered with flowers. *Petianth* of one leaf, oblong, incrusting, or rather crowning, the germen, contracted and entire at the mouth. *Cor.* to each flower, of one petal, funnel-shaped, inserted into the mouth of the calyx; tube thread-shaped, elongated; limb shorter than the tube, in five deep, ovate, obtuse, spreading segments. *Stam.* Filaments five, very short, in the throat of the corolla; anthers ovate, as long as the tube. *Pist.* Germen in the bottom of the calyx, or more properly inferior, oblong; style capillary, erect, longer than the corolla; stigma large, of various shapes. *Peric.* Capsule coated, turbinate, obtuse, tapering below, separating into two cells, each finally suspended by a thread at its summit. *Seeds* several, small, ovate, rather compressed, bordered with a membrane, tapering down into a bristle-shaped appendage, attached to the future.

Eff. Ch. Corolla funnel-shaped. Capsule inferior, of two disjointed cells, with many seeds. Common receptacle globose, hairy.

Section 1. *Heads of flowers terminal.*

1. *N. orientalis*. Broad-sharp-leaved Nauclea. Linn. Sp. Pl. 243. Ait. Hort. Kew. ed. 2. v. 1. 366. Willd. n. 1. (Katou Tsjaca; Rheede Hort. Malab. v. 1. 29. t. 33.)—Leaves elliptic-oblong, acute. Thorns none. Flower-stalk terminal, equal. Stamens the length of the corolla. Stigma pyramidal.—Native of the East Indies; communicated by lord viscount Valentia. A tall tree, with a thick trunk, hard wood, and copious branches. *Leaves* opposite, stalked, elliptic-oblong, acute at each end, entire, varying in length from two to four inches, smooth, with one rib, and numerous, strong, transverse, curved veins; shining above; paler and rather opaque beneath. *Stipulas* lanceolate, deciduous. *Flower-stalks* terminal, smooth, of

an equal thickness throughout, about an inch long. Head of *flowers* two inches in diameter, yellowish, inodorous. *Stigma* oblong, angular, rather acute.

2. *N. purpurea*. Purple Nauclea. Roxb. Coromand. v. 1. 41. t. 54. Willd. n. 2.—Leaves oblong, tapering at each end. Thorns none. Flower-stalk terminal, swelling upwards. Stigma globose.—Native of moist valleys, among the Circar mountains of Coromandel, flowering in April, the beginning of the hot season. Roxb. A small tree, with more oblong and tapering leaves than the foregoing, and dull purplish flowers, whose stigma is globose, with many furrows.

*Bancales* of Rumph. Amb. v. 3. 84. t. 55, quoted by Linnæus with doubt for the former, and by Willdenow without any hesitation for this, seems to agree best with that in the shape of its leaves.

3. *N. parvifolia*. Small-round-leaved Nauclea. Roxb. Coromand. v. 1. 40. t. 52. Willd. n. 3.—Leaves elliptical, rounded, bluntish. Thorns none. Flower-stalk terminal, equal. Stigma obtuse, hooded at the base. Calyx downy.—Native of almost every part of the coast of Coromandel, but chiefly among the mountains, flowering in the cold season. We have specimens from Koenig and Roxburgh. This is a large tree, whose wood is of a light chestnut colour, firm and close-grained, but rotting if exposed to wet. The branches appear to vary in stoutness, and the leaves in size; but their rounded, somewhat obovate, bluntish form is very unlike the two preceding. The flowers are of a dirty white, in smaller heads than the first species. Their stigma is very peculiar, obovate, concave and bordered at the base, as if hooded, and hung upon the style.

4. *N. africana*. Sessile-flowered Nauclea. Willd. n. 4. (Uncaria inermis; Willd. in Uster. Delect. v. 2. 199. t. 3.)—Leaves oblong-ovate, pointed. Thorns none. Heads of flowers sessile, terminal. Stamens longer than the tube of the corolla, reflexed. Stigma oblong. Gathered by Isert in Guinea. Segments of the calyx more rounded than in the last, and leaves pointed. Stigma oblong, with two furrows. Willd.

5. *N. latifolia*. Broad-leaved African Nauclea.—Leaves roundish, smooth. Thorns none. Heads of flowers terminal, on short stalks. Stigma oblong, furrowed. Stipulas triangular, deeply divided.—Gathered by the late Mr. Smeathman at Sierra Leone. The leaves in our specimen are very much damaged, but enough remains to prove them several inches in length and breadth, though we cannot judge of their termination. The stipulas are small, broad, slightly downy, very deeply cloven, their two segments cohering into a triangular figure. Flowers apparently orange-coloured; the segments of the corolla rounded. Stamens enclosed in the tube. Stigma long, acute; its lower part cylindrical and even; upper furrowed. Scales of the receptacle club-shaped, and elegantly fringed, nearly equal to the flowers.

6. *N. coadunata*. Combined Nauclea. Roxb. MSS.—Leaves heart-shaped, obtuse, somewhat downy. Thorns none. Heads of flowers terminal. Stigma pyramidal. Stipulas rounded, reticulated, combined at the base.—Communicated by Dr. Roxburgh from Calcutta, under the above name. The leaves are not unlike those of *Ficus bengalensis* in shape and size, but less coriaceous. Stipulas large, near an inch long, almost orbicular, apparently coloured, downy, with copious reticulated veins; combined at the base, so that they remain encircling the branch after they break off from their point of insertion. Flowers somewhat orange-coloured. Anthers nearly equal to the limb. Stigma tumid and smooth at the base; furrowed and pyramidal above.

Section 2. *Heads of flowers axillary.*



7. *N. Gambir*. Gambeer Nauclea. Hunter Tr. of Linn. Soc. v. 9. t. 22. (Funis uncatus; Daun Gatta Gambir angustifolia; Rumph. Amboin. v. 5. 63. t. 34. f. 2.)—Leaves ovate, pointed, smooth. Stem climbing. Branches round. Stipulas undivided. Flower-stalks axillary, becoming hooked spines.—Native of Amboyna, in thickets, especially near the coast. *Rumph.* It is cultivated according to Mr. Hunter, secretary to the Asiatic Society, for the sake of the drug called Gambeer, which is an inspissated extract from its leaves. In the Prince of Wales's island, where this gentleman made his observations, a Chinese prepared the Gambeer under his inspection. This article had previously been supposed the produce of the *Mimosa Catechu*. The plant however is cultivated for this purpose in Sumatra, along the Malay coast, and other places. A red rich soil is preferred, on the side of a hill, as the shrubs do not thrive in inundated situations, though a rainy season is favourable to the crop. They are propagated from seed, and are transplanted when nine inches high. Nine pounds of leaves yield above ten ounces of Gambeer. The qualities of this drug are astringent and tonic. Its first taste is bitter and austere, but a permanent sweetness remains. A purified white fort is preferred for chewing with the leaves of Betel, its most frequent use. The coarser kind serves for tanning and dyeing, in China and Java. The stem of this shrub climbs to a great height, when it meets with support, and has a rough brown bark. The branches are crowded, round, smooth, the young ones opposite, widely spreading. Leaves opposite, on short stalks, ovate, pointed, undulated, entire, above three inches long, and near an inch and a half wide, smooth and shining on both sides, paler beneath, with some axillary hairiness where the veins branch from the midrib. Stipulas ovate, or somewhat quadrangular, simple and undivided, spreading, deciduous. Flower-stalks axillary, solitary, straight and horizontal; not half the length of the leaf, round, slightly thickened at the base, furnished with a bracteated joint towards the extremity, which finally separates, after the seeds are ripe, the lower part of the stalk being permanent, and becoming a recurved hooked spine. The flowers compose a globe, about an inch in diameter, and are described by Rumphius as purplish, and inodorous. The slender capsules, almost an inch long, are elevated on stalks, nearly their own length. Seeds numerous, imbricated, minute, with an oblong, jagged, membranous appendage at each end. The branches which have attained the thickness of two fingers, are said by Rumphius to discharge, when wounded, a copious limpid fluid, which is a wholesome and pleasant drink.

8. *N. acida*. Acid-leaved Nauclea. Hunter Tr. of Linn. Soc. v. 9. t. 23. (Funis uncatus; Daun Gatta Gambir latifolia; Rumph. Amboin. v. 5. 63. t. 34. f. 1.)—Leaves ovate, pointed, smooth. Stem climbing. Branches quadrangular: Stipulas deeply divided. Flower-stalks axillary, becoming hooked compressed spines.—Sent by Mr. Hunter from Soongey Clooan in the Prince of Wales's island. It differs from the last, very essentially, in the deep divisions of its broad permanent stipulas. The flower-stalks are shorter, and when they become spines much broader and compressed, so much incurved as frequently to complete a circle. The leaves have an acid taste. If we are right in the citation of Rumphius, which there seems no reason to doubt, this species is very common in Amboina. He says the flowers appear in February, and are of a dirty white, but much admired for their grateful and permanent scent, like oil of cinnamon, or like jasmine, which last is called *Gambir*. The leaves are chewed like Betel, and this author seems to have heard of the *Gutta Gambir* being prepared

from this plant, though he was informed, from another quarter, of its being the produce of a totally different one; meaning perhaps *Mimosa Catechu*.

9. *N. scandens*. Climbing Hairy Nauclea. Buchan. MSS. (Funis uncatus lanifolius; Rumph. Amboin. v. 5. 65. t. 34. f. 3.)—Leaves ovate, pointed, hairy, as well as the branches. Stem climbing. Stipulas in two deep linear segments. Flower-stalks axillary, becoming hooked hairy spines.—Native of various parts of the East Indies; communicated by Dr. F. Buchanan. Distinguished from the two last by the rusty hairiness of its square branches, the narrowness of the deeply divided stipulas, and the roughness of the upper side of its leaves, whose under side is paler and more softly downy. Rumphius says the branches yield a limpid and pleasant fluid, which by keeping turns slightly bitter and astringent; and that the flowers are white, with a mixture of yellow, without any peculiar smell.

10. *N. aculeata*. Guiana Nauclea. Willd. n. 5. (Ouroparia guianensis; Aubl. Guian. v. 1. 177. t. 68.)—Leaves ovate, pointed, smooth. Stem climbing. Branches quadrangular. Stipulas triangular, undivided. Flower-stalks axillary, becoming hooked compressed spines.—Gathered by Aublet on the banks of creeks and rivers in Guiana, flowering in May and June. This has a great affinity to the three last, as the editors of Aublet have noticed. It most resembles *N. acida*, in its square branches, smooth leaves, and compressed, greatly recurved, spines, but differs essentially in having undivided stipulas. Aublet says, it climbs to the tops of the loftiest trees, crowning them with flowers, which are extremely variable in colour, being either yellow, white, or of a more or less deep red, with a very sweet smell. The fruit is said to be soft and blue, the size of a red gooseberry, but of two cells, separated by a membrane, to which are attached numerous hard, coriaceous, black seeds. This sounds very discordantly with the other species, and yet the fruit in question appears to be only a pulpy-coated capsule, between which, and that of the other species, there may perhaps be less difference, than between the various stigmas of those that compose the first section.

11. *N. sclerophylla*. Rigid-leaved Nauclea. Hunter Tr. of Linn. Soc. v. 9. t. 23.—Leaves elliptical, scarcely pointed, shining, rigid: reticulated and rough beneath. Stem climbing. Branches quadrangular, downy. Stipulas lunate, divided. Flower-stalks axillary, compressed, downy, becoming hooked spines.—Communicated by Mr. Hunter, from the top of the hill at Soongey Clooan, Prince of Wales's island. This is truly a magnificent species, remarkable for the great size of all its parts. The branches and stalks are all clothed with an extremely fine, close, ferruginous down. Leaves five inches long, and three broad, slightly heart-shaped at the base, wavy but hardly crenate, with a very slight blunt point; their substance rigid and coriaceous; their upper side smooth as if varnished; the under pale, opaque, with innumerable, repeatedly subdivided, reticulated, parallel, prominent, minutely rough veins, between which the whole leaf is exquisitely dotted. Flower-stalks two inches long, stout, rigid, rusty, compressed; finally recurved and pointed. Head of flowers above two inches in diameter, with six lanceolate, whorled, deciduous bracts under it, at the joint of the stalk. Calyx coriaceous; bristly within; downy and rusty, like the germs and stalks, externally. Corolla clothed with long, prominent, shining, tawny bristles. We have no account or specimen of the fruit.

12. *N. cordifolia*. Heart-leaved Nauclea. Roxb. Coromand. v. 1. 40. t. 53. Willd. n. 6.—Leaves heart-shaped, pointed, downy. Stem erect. Stipulas obovate, undivided. Flower-



Flower-stalks axillary, downy, usually in pairs.—Communicated by Dr. Roxburgh, from the mountainous parts of the coast of Coromandel, where it flowers in the wet season, the seeds ripening about April. The natives call it *Daduga*. This is a large and valuable timber-tree, very different in habit from all we have hitherto described in this section. The wood is yellow, exceedingly beautiful, like box, but lighter, and at the same time very close-grained. It is excellent for furniture, but not lasting when exposed to wet. The branches form a very large shady head, and are roundish, somewhat compressed, tortuous, downy when young. Leaves on downy stalks, which are about two inches long, of a roundish heart-shaped figure, thin and pliant, five or six inches long when full-grown, and nearly as broad, entire, wavy, bright green; roughish above; paler and downy beneath; with one rib, and numerous forked veins, whose ultimate ramifications are finely reticulated. *Stipulas* large, obovate, obtuse, undivided, downy, deciduous. *Flower-stalks* axillary, in pairs, combined at their base, slender, downy, near two inches long, with a joint towards the summit. *Bractes* at the joint, obtuse, simple or cloven, combined at the bottom, deciduous. Head of *flowers* about an inch in diameter, yellowish. Dr. Roxburgh says the number of *flower-stalks* varies from one to four. The *capsules* are slender, wedge-shaped, and abrupt. *Seeds* not imbricated, about six in each cell, inserted into its lower part, each tipped with a cloven membrane.

13. *N. Adina*. Myrtle-leaved Nauclea. *Adina globiflora*; Salisb. Parad. 116. t. 115.)—Leaves elliptic-lanceolate, pointed, smooth. Stem erect. *Stipulas* deeply divided, acute. Flower-stalks axillary, downy, solitary.—Native of China. It is said to have come up in the earth of some plants, sent from Canton to the late Rt. Hon. Charles Greville, with whom it flowered in July and August. The stem is shrubby, round, with numerous, opposite, spreading, slender branches, minutely downy when young. Leaves on short stalks, elliptic-lanceolate, two inches long, entire, thin, smooth, moderately veiny, tapering at the base, terminating in a blunt point. *Stipulas* deeply divided into two lanceolate, acute, spreading segments. *Flower-stalks* axillary, solitary, shorter than the leaves, slender like those of the last species, and, like that, remaining erect, not (as far as we have materials to judge by) becoming recurved or spinous. The head of *flowers* is smaller than in the last, yellowish. *Capsule* with four furrows, tapering at the base. *Seeds* two or three in each cell, fringed at the top with a jagged membrane. We cannot find grounds to separate this plant from *Nauclea* as the genus at present stands, the divided valves of the *capsule*, and especially the cloven *stipulas*, being by no means sufficient even to indicate a probable generic distinction. The aspect of the plant is indeed considerably unlike any of the foregoing species, which, moreover, differ greatly among themselves; and we cannot but suspect that a more complete acquaintance with them might authorize some division of the genus, though Willdenow hints that *Nauclea* is not really distinct from *Cephalanthus*.

It is a curious circumstance, that Linnæus has preserved in his herbarium a specimen of the last-described species, for the true *N. orientalis*, which he described from Hermann's collection, it not being in his own. We cannot possibly say which of the two he intended as his *Cephalanthus orientalis*, Sp. Pl. ed. 1. 95, of which he had a specimen then before him; but there is no positive evidence of its having been this *N. Adina*. His son came nearer the truth, in taking *N. parvisolia* of Roxburgh for the *orientalis*, which however are certainly distinct. S.

NAUCRARI, *Ναυκράροι*, among the Athenians, a de-

signation given to the chief magistrates of the *δημοί*, boroughs or townships, which were likewise called *ναυκράροι*, because each of them were obliged, besides two horsemen, to furnish out one ship for the public service.

NAUDE, GABRIEL, in *Biography*, was born at Paris in the year 1600. Shewing at an early age an attachment to letters, his parents sent him to a religious community, as well to learn the rudiments of grammar as the first principles of the Christian religion. Hence he was removed to the university, where he applied himself with great ardour to the pursuit of classical learning, and was created master of arts while very young. As soon as he had finished his course in philosophy, he remained undetermined what profession to choose. His friends advised him to assume the theological habit, but he preferred physic, and after a while fixed upon that faculty. This election, on his part, did not prevent him from indulging his genius in other branches of learning. The plan of his studies was extensive, and suited to his comprehensive talents and indefatigable industry, and he soon so much distinguished himself, that Henry de Mesmes, hearing his character, made him keeper of his library, and took him into his family. Naude was delighted with his new situation, because it furnished him with the means and leisure to improve himself as he could wish. In 1626 he went to Padua, but on the death of his father, which happened soon after, he was obliged to return to Paris. In 1631 cardinal Bagni appointed him his librarian and Latin secretary, and took him to Rome in the spring of that year. Naude continued in his service till the death of the cardinal, which happened in 1641, and in the mean time made an excursion to Padua to take his doctor's degree in physic, in order to support the character of physician to Lewis XIII. On the death of his patron he engaged in the service of cardinal Barberini, but as soon as Richelieu sent for him to be his librarian, he immediately returned to Paris; he was not however long in the service of that prime minister, who died in a few months after the arrival of his librarian, but he succeeded to the like post under Mazarine, for whom he formed a magnificent library, which, in the course of seven years, he raised from the first volume to 40,000. He next accepted an invitation from Christina to become her library-keeper, but he soon grew out of humour with his residence in Sweden, and quitted it loaded with presents from the queen and from other persons of distinction. The fatigue of his journey threw him into a fever, which obliged him to stop at Abbeville, where he died in July 1653. He wrote a great number of books, a catalogue of which may be found in Nicéron's Memoirs; but of them all, the "*Apologie des grands Hommes accusés de Magie*" is said to be the only one that continues to be read.

NAUDE, PHILIP, a celebrated professor of mathematics at Berlin, was born at Metz, in Lorraine, in 1654. At the age of twelve he was taken into the service of the court of Eisenach, in the capacity of page, and attendant on the young princes. He remained in this situation about four years, after which we hear no more of him for several years, except that, during this interval, he made considerable proficiency in different branches of learning, particularly in the mathematical sciences. When the edict of Nantes was revoked, he left France, with his wife and infant child, and went to Hanau, where he resided two years. From this place he removed to Berlin, and opened a mathematical school. In 1687 he was appointed to teach arithmetic and the elements of the mathematics at the college of Joachim. On the death of Langerfeld he succeeded to the vacant posts of mathematician to the court, and tutor



to the pages, and at the same time obtained a professorship in the Academy of Sciences. He obtained other considerable employments before his decease, which happened in 1729, when he had attained to the age of 75. He was author of "Elements of Geometry," in 4to. written in the German language, and printed at Berlin, and of some smaller pieces, which appeared at different periods in the "Miscellanea Berolinensia." He was author of a great number of theological pieces, which had a high reputation at the time in which our author flourished.

NAUDERS, in *Geography*, a town of the Tyrolese; eight miles N. of Glurentz.

NAUDOWESIES, or NAWDOWESSIES, an Indian nation inhabiting lands between lakes Michigan and Superior. The number of warriors is 500.

NAVE, a town of Africa, in Bondou. N. lat.  $14^{\circ} 20'$ . W. long.  $10^{\circ} 40'$ .

NAVE, in *Architecture*, NAVIS *Ecclesiae*, denotes the body of a church; or the place where the people are seated; reaching from the rail or baluster of the choir, to the chief door.

Balus derives the word from the Greek, *vao*; *temple*; which Salmasius brings farther from *vau*; *ship*; by reason the vault or roof of a church bears resemblance to a ship. The ancient Greeks called the nave *pronaos*; the Latins frequently call it *cella*.

The nave of the church belongs to the parishioners: it belongs to them to repair it, &c.

NAVE of a wheel, is that short thick piece in the centre of a wheel, which receives the end of the axle-tree, and in which the ends of the spokes are fixed; it is bound at each end with hoops of iron, called the *nave-bands*: it has likewise in each end of the hole, through which the end of the axle-tree goes, a ring of iron called the *wisber*, which saves the hole of the nave from wearing.

NAVE-Line, in *Sea Language*, is a sort of small tackle, depending from the head of the main-mast and fore-mast, and fastened to the middle of the parrel, immediately behind the mast, and communicating with the gears. It is used to keep the parrel directly opposite to the yard, and particularly whilst hoisting or lowering, as it would otherwise hang under the yard, and prevent it from being sufficiently braced.

NAVEL, a part in the middle of the belly, by anatomists called umbilicus.

NAVEL-String by anatomists is called funiculus umbilicalis. See FUNIS, and LABOUR.

NAVEL-Hoods, in *Ship-Building*, large pieces of stuff fitted into the hawse-holes, to keep the cables from wearing them.

NAVEL-Wort, in *Botany*. See COTYLEDON and CYNOGLOSSUM.

The greater navel-wort, with hooded leaves, sharply indented, and growing alternate, and a branching stalk, with erect flowers, which has been used in medicine, grows upon old walls and buildings in many parts of England, particularly in Shropshire and Somersetshire, and was reckoned gently cooling and moistening, refrigerating and astringent; useful in hot distempers of the liver: and thought to provoke urine, and to take off the heat and sharpness of it. The juice of it outwardly applied, was esteemed serviceable in relieving the shingles, St. Anthony's fire, the pain and inflammation of the piles, and to be useful against kibes and chilblains: it is an ingredient in the unguentum populeon.

NAVEL-Wort, *Bastard*. See CRASSULA.

NAVEL-Wort, *Venus's*, the name of a genus of plants, called by authors *emphalodes*; which see.

NAVEL-Wort, *Water*, a name sometimes given to the hydrocotyle of botanists. See HYDROCOTYLE.

NAVESINK HARBOUR, in *Geography*, a port on the coast of New Jersey; five miles N.W. of Shrewsbury.

NAVETTE, in *Botany*, the name by which most of the European nations call the *napus*, or *bunias sylvestris* of Lobel, the plant from the seeds of which the oil, which we call rape oil, and the French and others navette oil, is expressed. The plant is cultivated in many parts of England, and in other countries, for the sake of the seed; the oil drawn from this is used by many artificers, and is of a fine yellow colour, and the smell is not offensive. The cake remaining after the expression of the oil, retains, like that of mustard, the acrimony of the seeds.

NAVEW. See NAPUS.

NAUGAMUNGLUM, in *Geography*, a town of Hindoostan, in Myfore; 28 miles N. of Seringapatam.

NAUGARDTEN, or NEUGARTEN, a town of Hinder Pomerania; 50 miles W. of New Stettin. N. lat.  $53^{\circ} 42'$ . W. long.  $15^{\circ} 5'$ .

NAUHEIM, a town of Germany, in the county of Hanau Munzenberg, which has salt-works; taken by the French in 1792; 13 miles N. of Hanau.

NAVIA, a town of Spain, in the province of Asturias, situated upon the river called after it, the Navias, which waters a beautiful and fertile plain. Navia has a considerable harbour, which carries on some trade; and the inhabitants are persuaded, that it was founded by Ham, one of the sons of Noah, who gave to the town, as well as the river, the name of his wife Navia; 36 miles N.W. of Oviedo.

NAVIA de Suanna, a town of Spain, in Galicia; 20 miles S.S.E. of Mondonedo.

NAVICULA, in *Conchology*, a name given by a late French author to the class of shells called by us the *nautili*. See NAUTILUS.

NAVICULARE Os, in *Anatomy*, a bone of the tarsus. See EXTREMITIES.

NAVIDAD, in *Geography*, a town of Mechoacan, in Mexico, with a harbour on the North Pacific ocean; 156 miles W. of the city of Mexico. N. lat.  $18^{\circ} 51'$ . W. long.  $111^{\circ} 10'$ .

NAVIER, PETER FOUSSAINT, in *Biography*, a distinguished physician and chemist, was born at St. Dizier early in the eighteenth century, and settled in the practice of his profession at Chalons-sur-Marne. He was universally esteemed for the good qualities both of his head and heart, but particularly for his humane and active attendance on the poor of his vicinity, to whom he performed great services during several epidemics. He died in 1779. He distinguished himself by various chemical researches, especially by his discovery of nitrous ether, and by some curious observations relative to the composition of the animal fluids, which were published in his essay, entitled "Observations sur l'Amollissement des Os," in 1755, suggested by the remarkable case of Supiot. He was likewise the author of some anatomical and practical dissertations, particularly one on epidemic diseases, entitled "Dissertation sur plusieurs Maladies populaires, qui ont regné depuis quelque tems à Chalons-sur-Marne," 1753. Eloy Dict. Hist. Gen. Biog.

NAVIGABLE RIVERS. See RIVER.

NAVIGATION, the art or act of sailing, or of conducting a vessel from one place to another, in the safest, shortest, and most commodious way.

This art, in the full latitude of the word, comprehends three parts: 1. The art of constructing and building ships.

(See



(See SHIP-BUILDING.) 2. The loading of ships. And, 3. The conducting and guiding ships through the sea; which is in a peculiar sense called *navigation* or *sailing*; which see.

In this restrained sense of the word, navigation is either *common* or *proper*.

NAVIGATION, *Common*, usually called *coasting*, (which see,) is where the ports are on the same, or very neighbouring coasts; and where the vessel is seldom out of sight of land, or out of reach of sounding.

In this, little else is required but an acquaintance with the lands, the compass, and sounding line; each of which see in its place, COMPASS, and SOUNDING.

NAVIGATION, *Proper*, is where the voyage is long, and pursued through the main ocean.

In this, besides the requisites in the former, are likewise required the use of Mercator's chart, azimuth, and amplitude compasses, log-line, and other instruments for celestial observations; as quadrants, fore-staffs, &c. See each instrument, &c. in its place.

Navigation turns principally on four things; two of which being known, the rest are easily found from them by the table, scales, and charts.

These four things are, the difference of latitude, difference of longitude, the reckoning or distance run, and the course or rhumb sailed on.

The latitudes are easily found, and that with sufficient accuracy. See LATITUDE.

The course and distance are had by the log-line, or dead reckoning, and the compass. See LOG, COMPASS, COURSE, and DISTANCE.

Nor is there any thing wanting to the perfection of navigation, but to determine the longitude. The mathematicians of many ages have applied themselves, with the utmost assiduity, to supply this grand desideratum, and in late times with a considerable degree of success.

For the various methods that now occasionally obtain at sea, for this purpose, and an account of the discoveries that have been made, see LONGITUDE.

The poets refer the invention of the art of navigation to Neptune, some of the ancients to Bacchus, others to Hercules, others to Jason, others to Janus, who is said to have made the first ship. Historians ascribe it to the Ægines, the Phœnicians, Tyrians, and the ancient inhabitants of Britain. Some will have it, the first hint was taken from the flight of the kite; others, as Oppian, de Piscibus, lib. i. from the fish called nautilus: others ascribe it to accident.

Scripture refers the origin of so useful an invention to God himself, who gave the first specimen thereof in the ark built by Noah. For the raillery the good man underwent on account of his enterprise, shews evidently enough, the world was then ignorant of any thing like navigation: and that they even thought it impossible.

However, history represents the Phœnicians, especially those of their capital, Tyre, as the first navigators; being urged to seek a foreign commerce by the narrowness and poverty of a slip of ground they possessed along the coasts; as well as by the convenience of two or three good ports; and by their natural genius for traffic.

Accordingly Lebanon, and the other neighbouring mountains, furnishing them with excellent wood for ship-building, in a short time they were masters of a numerous fleet; with which, constantly hazarding new navigations, and settling new trades, they soon arrived at an incredible pitch of opulence and populousness; having rendered themselves masters

of several commodious harbours toward the bottom of the Arabian gulf, and, after the example of the Egyptians, established a regular intercourse with Arabia and the continent of India on the one hand, and with the eastern coast of Africa on the other: so that they were in a condition to send out colonies, the principal of which was that of Carthage, which, keeping up their Phœnician spirit of commerce, in time not only equalled Tyre itself, but vastly surpassed it; pursuing the course which the Phœnicians had opened, and sending its merchant-fleets through Hercules's Pillars, now the Straits of Gibraltar, along the western coast of Africa, to the south, almost to the tropic of Cancer, having discovered the Fortunate Islands, now known by the name of the Canaries, which were the utmost boundary of ancient navigation in the western ocean; and to the north along the coast of Europe, visiting particularly Spain, Gaul, and Britain: and even, if we believe some authors, to America itself; the discovery of which, so many ages afterwards, has been so glorious to the Spaniards.

The progress of the Phœnicians and Carthaginians was not owing merely to the desire of extending their trade from one country to another: voyages were undertaken, the sole object of which was to discover new countries, and to explore unknown seas. Such, during the prosperous ages of the Carthaginian republic, were the famous navigations of Hanno and Himilco. Both their fleets were equipped by authority of the senate, and at the public expence. Hanno was directed to steer towards the south, along the coast of Africa, and he seems to have advanced much nearer the equinoctial line than any former navigator. Himilco had it in charge to proceed towards the north, and to examine the western coasts of the European continent. Of the same nature was the extraordinary navigation of the Phœnicians round Africa. A Phœnician fleet, we are told (Herod. lib. iv. cap. 42.), fitted out by Necho, king of Egypt, took its departure, about 604 years before the Christian era, from a port in the Red sea, doubled the southern promontory of Africa, and, after a voyage of three years, returned by the straits of Gades, to the mouth of the Nile. Eudoxus of Cyzicus is said (Plin. Nat. Hist. lib. ii. cap. 67.) to have held the same course, and to have accomplished the same arduous undertaking. However, long after this navigation of the Phœnicians and of Eudoxus round Africa, Polybius, the most intelligent and best informed historian of antiquity, asserts, that it was not known, in his time, whether Africa was a continued continent, stretching to the south, or whether it was encompassed by the sea. (Polyb. Hist. lib. iii.) And it appears from the testimony of Pliny (Hist. Nat. lib. ii. cap. 68.), Strabo (lib. ii. p. 155. lib. xvii. p. 1180.), Ptolemy (Geogr. lib. iv. cap. 9.), that the accounts of those voyages were not fully credited. Robertson's Hist. America, vol. i. p. 13. p. 354, ed. 8vo.

Tyre, whose immense riches and power are represented in such lofty terms, both in sacred and profane authors, being destroyed by Alexander the Great, its navigation and commerce were transferred by the conqueror to Alexandria, a new city, admirably situated for those purposes, proposed for the capital of the empire of Asia, which Alexander then meditated. And thus arose the navigation of the Egyptians, which was afterwards so cultivated by the Ptolemies, that Tyre and Carthage (which last, after having a long time disputed empire with the Romans, was at length subdued) were quite forgot.

Egypt being reduced into a Roman province after the battle of Actium, its trade and navigation fell into the hands of Augustus; in whose time Alexandria was only inferior



inferior to Rome: and the magazines of the capital of the world were wholly supplied with merchandises from the capital of Egypt.

At length, Alexandria itself underwent the fate of Tyre and Carthage, being surpris'd by the Saracens; who, in spite of the emperor Heraclius, overspread the northern coasts of Africa, &c. whence the merchants being driven, Alexandria has ever since been in a languishing state, though still it enjoys a considerable part of the commerce of the Christian merchants trading to the Levant.

The fall of Rome, and its empire, drew along with it not only that of learning, and the polite arts, but that of navigation; the Barbarians, into whose hands it fell, contented themselves with the spoils of the industry of their predecessors.

However, one circumstance prevented commercial intercourse with distant nations from ceasing altogether. Constantinople, though often threatened by the fierce invaders, who spread desolation over the rest of Europe, was so fortunate as to escape their destructive rage. In this city, the knowledge of ancient arts and discoveries was preserved; and commerce continued to flourish there, with the taste for elegance, and the luxuries of foreign countries, when it was almost extinct in every other part of Europe. The citizens of Constantinople did not confine their trade to the islands of the Archipelago, or to the adjacent coasts of Asia: they took a wider range, and, following the course which the ancients had marked out, imported the commodities of the East Indies from Alexandria. When Egypt was torn from the Roman empire by the Arabians, the industry of the Greeks discovered a new channel, by which the productions of India might be conveyed to Constantinople. They were carried up the Indus, as far as that great river is navigable; there they were transported by land to the banks of the river Oxus, and proceeded down its stream to the Caspian sea. There they entered the Volga, and sailing up it, were carried by land to the Tanais, which conducted them into the Euxine sea, where vessels from Constantinople waited their arrival.

But no sooner were the more brave among those nations well settled in their new provinces; some in Gaul, as the Franks; others in Spain, as the Goths; and others in Italy, as the Lombards; than they began to learn the advantages of navigation and commerce, and the proper methods of managing them, from the people they subdued; and this with so much success, that in a little time some of them became able to give new lessons, and set on foot new institutions, for its advantage.

Thus it is to the Lombards we usually ascribe the invention and use of banks, book-keeping, exchanges, re-changes, &c.

It does not appear which of the European people, after the settlement of their new masters, first betook themselves to navigation and commerce. Some think it began with the French; though the Italians seem to have the justest title to it, and are accordingly ordinarily looked on as the restorers of this science, as well as of the polite arts, which had been banished together, from the time the empire was torn asunder.

The people of Italy, then, and particularly those of Venice and Genoa, have the glory of this restoration; and it is to their advantageous situation for navigation, they in a great measure owe their glory.

In the bottom of the Adriatic were a great number of marshy islands, only separated by narrow channels, but those well screened, and almost inaccessible, the residence of some

fishermen, who here supported themselves by a little trade of fish and salt, which they found in some of these islands. Thither, then, the Veneti, a people inhabiting that part of Italy along the coasts of the gulf, retired, when Alatic, king of the Goths, and afterwards Attila, king of the Huns, ravaged Italy.

These new islanders, little imagining that this was to be their fixed residence, did not think of composing any body politic; but each of the seventy-two islands of this little Archipelago continued a long time under its separate distinct master, and each made a distinct commonwealth. When their commerce was become considerable enough to give jealousy to their neighbours, they began to think of uniting into a body; and it was this union, first begun in the sixth century, but not completed till the eighth, that laid the sure foundation of the future grandeur of the state of Venice.

From the time of this union, their fleets of merchantmen were sent to all the ports of the Mediterranean; and at last to those of Egypt, particularly Cairo; a new city, built by the Saracen princes on the eastern bank of the Nile, where they traded for their spices, and other products of the Indies.

Thus they flourished, increased their commerce, their navigation, and their conquests on the terra firma, till the famous league of Cambray, in 1508, when a number of jealous princes conspired to their ruin; which was the more easily effected, by the diminution of their East India commerce, of which the Portuguese had gained one part, and the French another.

Genoa, which had applied itself to navigation at the same time with Venice, and that with equal success, was a long time its dangerous rival, disputed with it the empire of the sea, and shared with it the trade of Egypt, and other parts both of the East and West.

Jealousy soon began to break out; and the two republics engaging in a contest, it was three centuries almost continual war, before the superiority was ascertained; when, towards the end of the fourteenth century, the fatal battle of Chioza ended the noble strife; the Genoese, who till then had usually the advantage, having now lost all; and the Venetians, almost become desperate, at one happy blow, beyond all expectation, secured to themselves the empire of the sea, and superiority in commerce.

The crusades (see CROISADES) contributed in a great measure to the revival, or at least to the more rapid progress, of commerce and navigation; for the Genoese, the Pisans, and Venetians, furnished the transports, which carried those vast armies, composed of all the nations in Europe, into Asia upon this wild enterprize; and likewise supplied them with provisions and military stores.

Other travellers, besides those whom religious zeal sent forth to visit Asia, ventured into remote countries, from the prospect of commercial advantage, or from motives of mere curiosity. The first and most eminent of these was Marco Polo, a Venetian of a noble family, about the year 1269; he was succeeded about half a century after by sir John Mandeville, an Englishman. But the present art of navigation owed its rise to the invention of the mariner's compass, in the beginning of the fourteenth century; and made considerable progress during the voyages that were begun in the year 1418, by Henry, duke of Visco. This learned prince, brother to Edward, king of Portugal, was particularly skilled in cosmography, and employed a person from the island of Majorca to teach navigation, and to make instruments and charts for the sea. These voyages, being greatly extended



extended after the discovery of Porto Santo and Madeira, the art was improved under the succeeding monarchs of that nation: inasmuch that Roderic and Joseph, physicians to king John II., together with one Martin de Bohemia, a Portuguese native of the island of Fayal, scholar to Regiomontanus, about the year 1485, calculated, for the use of the sailors, tables for the sun's declination, and recommended the astrolabe for taking observations at sea. About this time, Columbus, a native of Genoa, having thoroughly acquainted himself with the discoveries and observations of the Portuguese, and having also acquired considerable experience in the art of navigation, made a proposal to king John II. of exploring a passage to India, by sailing directly towards the west, across the Atlantic ocean. John rejected this proposal in a very dishonourable manner; and Columbus instantly quitted the kingdom, and landing in Spain towards the close of the year 1484, he resolved to propose his plan to Ferdinand and Isabella, with whom, after repeated application and long delay, he ultimately succeeded. In August, 1492, Columbus, furnished with a small armament of three ships, set sail, and steered directly for the Canary Islands: from thence, holding his course due west, he stretched away into unfrequented and unknown seas. After many difficulties, he at length arrived at Guanahani, one of the large cluster of islands called the Lucaya, or Bahama Isles. He also discovered Cuba, Hispaniola, and several other small islands, and having left a small colony in a fort at Hispaniola, returned to Spain in March 1493. In September following he set out on his second voyage, and sailed by the Leeward Islands to Hispaniola: in a third voyage, undertaken in the year 1498, he discovered the continent of America. In the same year, Vasco de Gama returned to Lisbon, from a voyage to the East Indies by the Cape of Good Hope. Columbus, it is said, before he attempted the discovery of America, consulted Martin de Bohemia, as well as others, and during the course of his voyage instructed the Spaniards in navigation: for the improvement of which art, the emperor Charles V. afterwards founded a lecture at Seville. This art was considerably improved by the discovery of the variation of the compass, and by the use of the cross-staff. At length there were published, in Spanish, two treatises, containing a system of the art, which were in great esteem: the first by Pedro de Medina, at Valladolid in 1545, called "*Arte de Navegar*;" the other at Seville, in 1556, by Martin Cortes, under the title of "*Breve Compendio de la Sphera, y de la Arte de Navegar, con nuevos Instrumentos y Reglas*." This is said to have been composed at Cadiz in 1545; and a translation of it was published in London in 1651, which passed through several impressions. Besides the improvement which the art of navigation received from the proposals of Werner, and Gemma Frisius, for finding the longitude, it was much promoted by Pedro Nunez, or Nonius, who composed a treatise on this subject, so early as 1537, in the Portuguese language, which thirty years after was printed at Basil in Latin, with additions, under the title of "*De Arte et Ratione Navigandi*." In this work, the errors of the plane chart are exposed, and the problem of determining the latitude, from two observations of the sun's altitude, and the intermediate azimuth, is resolved. In 1577, Mr. William Bourne published his treatise, intitled "*A Regiment for the Sea*," and intended as a supplement to that of Cortes. See *LOG*.

The mistakes of Medina were well exposed by Michael Coignet, a native of Antwerp, who, in 1581, published a small treatise, intitled "*Instruction Nouvelle des Points plus excellens & necessaires touchant l'Arte de Naviger*."

In the same year Mr. Robert Norman published his discovery of the dipping-needle, in a pamphlet called the "*New Attractive*;" to which is always subjoined Mr. William Burrough's "*Discourse of the Variation of the Compass*." In 1594, captain John Davis published a small treatise, intitled "*The Seaman's Secrets*," which was much esteemed in its time. The writers of this period complained much of the errors of the plane chart, which continued still in use, though they were unable to discover a proper remedy: till Gerrard Mercator contrived his universal map (see *Mercator's CHART*), which he published in 1569, without clearly understanding the principles of its construction: these were first discovered by Mr. Edward Wright, who sent an account of the true method of dividing the meridian from Cambridge, where he was a fellow, to Mr. Blundeville, with a short table for that purpose, and a specimen of a chart so divided. These were published by Blundeville in 1594, among his Exercises; to the later editions of which was added his "*Discourse of Universal Maps*," first printed in 1589. However, in 1599, Mr. Wright printed his "*Correction of certain Errors in Navigation*," in which work he shews the reason of this division, the manner of constructing his table, and its uses in navigation. A second edition of this treatise, with farther improvements, was printed in 1610, and a third edition by Mr. Moxon, in 1657. The method of approximation, by what is called the middle latitude, now used by our sailors, occurs in Gunter's works, first printed in 1623. About this time logarithms began to be introduced, which were applied to navigation in a variety of ways by Mr. Edmund Gunter; though the first author who applied the logarithmic tables to the cases of sailing, was Mr. Thomas Addison, in his "*Arithmetical Navigation*," printed in 1625. In 1635, Mr. Henry Gellibrand printed "*A Discourse Mathematical on the Variation of the Magnetical Needle*," containing his discovery of the changes to which the variation is subject. In 1631 Mr. Richard Norwood published an excellent "*Treatise of Trigonometry*," adapted to the invention of logarithms, particularly in applying Neper's general canons; and for the farther improvement of navigation, he undertook the laborious work of measuring a degree of the meridian, for examining the divisions of the log-line. Of this affair he has given a full and clear account in his "*Seaman's Practice*," first published in 1637; where he also describes his own excellent method of setting down and perfecting a sea-reckoning, &c. This treatise, and that of trigonometry, were continually reprinted, as the principal books for learning scientifically the art of navigation. What he had delivered, especially in the latter of them, concerning this subject, was contracted as a manual for sailors in a very small piece, called his "*Epitome*," which has gone through innumerable editions. About the year 1645, Mr. Bond published, in Norwood's Epitome, a very great improvement in Wright's method, by a property in his meridian line, whereby its divisions are more scientifically assigned than the author himself was able to effect; which he deduced from this theorem, that these divisions are analogous to the excesses of the logarithmic tangents of half the respective latitudes augmented by forty-five degrees above the logarithm of the radius: this he afterwards explained more fully in the third edition of Gunter's works, printed in 1653; and the demonstration of the general theorem was supplied by Mr. James Gregory of Aberdeen, in his "*Exercitationes Geometricæ*," printed at London in 1668, and afterwards by Dr. Halley, in *Phil. Transf.* N° 219, and by Mr. Cotes, *Phil. Transf.* N° 388. In 1700, Mr. Bond, who imagined that he had discovered the longitude, by having found out the true theory



of the magnetic variation, published a general map, on which were delineated curve lines, expressing the paths where the magnetic needle had the same variation. The positions of these curves will indeed continually suffer alterations; but they should be corrected from time to time, as they have already been for the years 1744 and 1756, by Mr. William Mountaine, and Mr. James Dodson. The allowances proper to be made for lee-way are very particularly set down by Mr. John Buckler, and published in a small tract first printed in 1702, intitled "A New Compendium of the whole Art of Navigation" written by Mr. William Jones.

As it is now generally agreed that the earth is a spheroid, whose diameter at the poles is shorter than the other, Dr. Murdoch published a tract in 1741, in which he accommodated Wright's sailing to such a figure; and Mr. Maclaurin in the same year gave a rule, in the Phil. Trans. N<sup>o</sup> 461. for determining the meridional parts of a spheroid, which speculation he has farther prosecuted in his Fluxions, printed at Edinburgh in 1742.

The principal foreign writers on navigation are Bartolomeu Crescetti, of Rome, in 1607; father George Fournier, at Paris, in 1633; John Baptist Riccioli, at Bologna, in 1661; father Millet Dechaies, in 1674 and 1677; the sieur Blondel St. Aubin, in 1671 and 1673; M. Daffier, in 1683; M. Sauveur, in 1692; Mr. John Bouguer, in 1698; father Pezenas in 1733 and 1741; and M. Peter Bouguer, who, in 1753, published a very elaborate treatise on this subject, intitled "Nouveau Traité de Navigation;" in which he gives a variation compass of his own invention, and attempts to reform the log, as he had done in the Memoirs of the Academy of Sciences for 1747. He is also very particular in determining the lunations more accurately than by the common methods, and in describing the corrections of the dead reckonings. This book was abridged and improved by M. de la Caille in 1760: to these we may add Don George Juan of Spain, in 1757. For an account of the several steps that have been pursued for the discovery of the longitude, see LONGITUDE. For an account of Hadley's quadrant, and its use in nautical observations, see QUADRANT. For the method of making artificial magnets, and their use, see MAGNET, COMPASS, and NEEDLE.

Those who are desirous of perusing a fuller account of the progress of navigation, may consult Dr. James Wilson's preface to Dr. Robertson's "Elements of Navigation," in two volumes, octavo, 1772: a work deservedly held in the highest estimation.

But to return to the history of navigation in its connection with commerce. About the same time that navigation was retrieved in the southern parts of Europe, a new society of merchants was formed in the north: which not only carried commerce to the greatest perfection it was capable of, till the discovery of the East and West Indies, but also formed a new scheme of laws for the regulation of it, which still obtain, under the name of "Uses and customs of the sea."

This society is that famous league of the Hans-towns, commonly supposed to have begun about the year 1164. For the modern state of navigation in England, Holland, France, Spain, Portugal, &c. see COMMERCE, COMPANY, &c.

We shall only add, that in examining the reason of commerce's passing successively from the Venetians, Genoese, and Hans-towns, to the Portuguese and Spaniards, and from these again to the English and Dutch, it may be established as a maxim, that the relation between commerce and navigation, or, if we may be allowed to say it, their union, is so intimate, that the fall of the one inevitably draws after

it the other: and that they will always either flourish or decline together.

Hence so many laws, ordinances, statutes, &c. for its regulation; and hence, particularly, that celebrated act of navigation, which an eminent foreign author calls the Palladium, or tutelar deity, of the commerce of England; which is too important not to be here mentioned: as it is the standing rule, not only of the English among themselves, but also of other nations with whom they traffic.

NAVIGATION ACTS are those statutes which have been passed at different times by the legislature of this country, for the protection and extension of navigation.

But by the Navigation Act, particularly and emphatically so called, is meant the statute 12 Charles II. c. 18. intitled "An act for the encouraging and increasing of shipping and navigation:" all subsequent laws on this subject are but comments on this, modifying or explaining its different regulations, but leaving untouched its general and fundamental principles.

Before we proceed to examine the soundness of the principles on which the navigation acts are grounded; the necessity or expediency of their first enactment; the immediate consequences which resulted from them; the permanent benefits which they are said to have bestowed on this country; and the policy of their continuance on the statute-book,—it may be proper to give a brief and rapid sketch of their history.

The first act, which had avowedly and exclusively for its object the augmentation of the navy of England, was passed in the reign of Richard II.; by the statute 5 Richard II. c. 3. it was enacted that none but the king's liege people should ship any merchandize out of, or into, the realm, and only in ships of the king's ligeance, on pain of forfeiture. This statute was passed at a time when the navy was greatly diminished; but its effects do not appear to have answered the expectations of the legislature; for by statute 6 Richard II. c. 8. the former statute was greatly modified, the merchants being obliged to give English ships the preference, only in case they were able and sufficient.

In 1440, the decline of the English navy was again complained of; and the Commons proposed the enactment of a law, of similar import and force with that of 5 Richard II. c. 3, but it was rejected by Henry VI. In the reign of Henry VII., however, two acts were passed for the encouragement and protection of English shipping, viz. 1 Henry VII. c. 8. (1485), and 4 Henry VII. c. 10. (1489.) Henry VIII. also passed a law for the same purpose in 1541, 32 Henry VIII. c. 14.

In Elizabeth's reign (1562), the carriage by sea of corn, wine, and other articles, and the taking, curing, and carrying by sea, of fish, were regulated with a view "to the maintenance and increase of the navy." And in 1593, the same sovereign granted particular privileges in cases where goods were carried in English vessels.

It appears from Rymer's *Fœdera* (xvii. 414.) that James I., in the Commission of Enquiry which he issued, expressly directed the attention of the commissioners to the same subject.

These laws, however, were either evaded or relaxed, for Charles I. found it necessary to revise and confirm them.

We are now arrived at that statute, which is justly regarded as the foundation of the Navigation Act of Charles II. This statute was passed by the Usurpation Parliament on the 9th of October, 1651. In the year preceding, indeed, the same parliament had sketched a faint and rude outline of the Navigation Act; the sugar islands still adhering to Charles II., the statute of 1650 prohibited all ships of fo-



## NAVIGATION ACT.

reign nations from trading with any English plantations without licence from the council of state. The statute of 1651 arose partly from the same cause, and partly from the circumstance that the English merchants used to freight Dutch ships to bring home merchandize from America and the West Indies, as they could be had at a lower rate of freight than native ships. Till this act passed, it appears, that notwithstanding the existence of former unrepealed acts for the protection and increase of English shipping, all nations in amity with England actually did import into England what commodities they pleased, and in what ships they pleased; and as the Dutch, at that period, were the principal carriers of Europe, most of the merchandize imported into this country was imported by them.

The law of 1651 enacted that no commodities (colonial or of any other description) should be imported into England, unless in vessels solely owned, and commanded, and principally manned, by English subjects; and where the commodities were foreign, unless they were entirely conveyed in such vessels from the place where the commodities grew, or to which they were usually, in the first instance, transported by sea. There were some peculiar exceptions, and one grand and general one, *viz.* goods originally produced, or first transported by sea from an European state, might be imported thence, into England, in vessels owned by the subjects of that state.

The title of this act was suited to the design which it had in view; it was "Goods from foreign parts, by whom to be imported" (Scobell's Acts, 1651, c. 22. p. 132.); and the consequence was, that the Dutch were cut off from the carrying trade with our colonies, and their importation of fish into this country was laid under great restrictions and heavy burdens.

Before the passing of this law, great jealousy existed and frequent disputes had taken place, between this country and Holland; these were greatly increased and embittered by it; acting in conformity with it, our ships of war insisted on their right to search Dutch vessels, and in several instances made prizes of them, where they found that they contravened the act. The war which broke out in the subsequent year, and which was carried on with great rancour and obstinacy, arose, partly at least, from the Navigation Act of 1651.

The Restoration Parliament were so clearly and strongly convinced of the necessity and benefit of the Navigation Act, that they sanctioned it, first in 1660, and afterwards in 1662; the first of these statutes, 12 Charles II. c. 18. (as has been already observed), is that which is emphatically called the Navigation Act.

The principal dispositions of the Navigation Act are thus summed up by Adam Smith, *Wealth of Nations*, ii. 192.

First, all ships, of which the owners, masters, and three-fourths of the mariners are not British subjects, are prohibited, under pain of forfeiting ship and cargo, from trading to the British settlements and plantations, or from being employed in the coasting trade of Great Britain.

Secondly, a great variety of the most bulky articles of importation can be brought into Great Britain only, either in such ships as are above described, or in ships of the country where those goods are produced, and of which the owners, masters, and three-fourths of the mariners, are of that particular country; and when imported even in ships of this latter kind, they are subject to double alien's duty. If imported in ships of any other country, the penalty is forfeiture of ships and goods.

Thirdly, a great variety of the most bulky articles of importation are prohibited from being imported, even in

British ships, from any country but that in which they are produced, under pain of forfeiting ship and cargo.

Fourthly, salt fish of all kinds, whale-fins, whale-bone, oil and blubber, not caught by and cured on board British vessels, when imported into Great Britain, are subject to double alien's duty.

This act differed from that of 1651, in its second enacting clause, which did not permit any but English subjects to be factors or agents in English colonies. Before this time the Dutch were the principal factors or agents in our colonies; and the third enacting clause secured the East India, Guinea, and Levant companies, from foreign shipping.

The act 14 Charles II. c. 11. also differed in some respects from the act 12 Charles II. c. 18; by the latter it was sufficient, with respect to the vessel, if she was either owned or built at home; while, by the former of these acts, both these circumstances were declared indispensable.

In commercial writers, the phrases "enumerated and non-enumerated commodities" frequently occur; these expressions took their rise from the Navigation Act. Those are "enumerated commodities," which, by this act, cannot be carried from the colonies to any foreign parts, without being first unladen in Great Britain. Subsequent acts of parliament have enlarged or contracted the number of enumerated commodities, according to circumstances; and one general exception has been introduced in this branch of the Navigation Act; as some of the enumerated articles are permitted to be carried, by a direct course, in ships of the empire, to places south of cape Finisterre.

The principal objects which the Navigation Act, 12 Charles II. c. 18. had in view, will be best explained by its preamble, which declares it to be passed, "not only for the sake of employing and increasing English shipping and seamen, and securing a vent for woollen and other manufactures; but also to make this kingdom a staple of the commodities of those plantations, as well as of the commodities of other countries, for the supplying them (it being the usage of other nations to keep their plantation trade to themselves); and farther, if colonial commodities should be taken from any part but the plantations, that the trade of them would thereby in a great measure be deserted from hence, and carried elsewhere; his majesty's customs and other revenues much lessened; the fair trader prejudiced; and this kingdom not continue a staple of plantation commodities, nor that vent, for the future, of the victual, and other native commodities of this kingdom."

British built ships are declared to be such as have been built in Great Britain, Ireland, Jersey, Guernsey, or the Isle of Man, or in some colony at the time belonging to Great Britain; any ship whatever, taken and condemned as lawful prize, is to be regarded as a British built ship. Ever since the Navigation Act passed, "Surveyors of the Act of Navigation" have been appointed at the Custom-house, whose duty it is to keep a register of all British built ships.

British seamen are declared to be such as are natural born subjects of the empire; or naturalized by act of parliament; or made denizens; or become subjects by conquest. And by 33 George III. c. 68. foreign seamen, who shall serve three years in the British navy, during the time of war, if they have not taken the oath of allegiance to a foreign state, may be employed, and shall be considered as British seamen. The same statute also introduced the principal modification which has taken place in the Navigation Act, by enacting, that from the conclusion of the war, no goods shall be ~~ex-~~ported in British vessels, unless the master, and three-fourths



of the crew were British ; the Navigation Act not interfering with the exportation of goods from British ports.

Such is a brief history, and general view, of those acts which have been passed for encouraging and increasing shipping and navigation ; before we proceed to the other division of this article, it may be proper to mention that they are commonly very much relaxed, and in some particular cases entirely done away, in time of war ; and only rigidly and uniformly enforced in time of peace.

1. The principle upon which the Navigation Act proceeds is this, that it is politic and advantageous to burden foreign, in order to encourage domestic industry : this principle has been very strongly and generally objected to by the most acute and intelligent writers on political economy ; and yet, besides the case in question, there would appear to be other cases of a more extended nature, in which a deviation from this principle might prove beneficial to the interests of the community at large.

There can be no doubt that it is unwise and disadvantageous to burden foreign industry, merely for the sake of encouraging domestic industry, when, by this means, the latter is thus diverted from a channel, in which it is exerted with great profit, into one in which the profit, if it were not thus protected by monopoly, bounty, or duty, would not be near so great : but there are undoubtedly cases, especially in the rude and less enlightened stages of commercial activity and intelligence, in which industry might either be directed to a more profitable employment, or in which it might be extended to objects hitherto untouched, and supposed without its reach ; and yet, unless government step forth and laid a burden on foreign industry, domestic industry might not be thus directed or extended. But wherever, notwithstanding the application of a proper degree of industry, capital, and skill, home produce is inferior in quality, or higher in price, than foreign produce of the same description, the latter should be preferred, and no obstacle should be thrown in the way of its free importation and general use.

Besides this more general exception to the principle of political economy, which we have been considering, the case of the navigation laws seems to be one of a more peculiar nature, and more confined character. This exception proceeds on the idea, that in such a country as Great Britain, its defence depends very much upon its sailors and shipping ; and that defence is of much more importance than mere opulence ; and ought therefore to be allowed to supersede the operation of all general principles. The only question is, whether this encouragement to sailors and shipping might not have been given as effectually and permanently by some other means, than by imposing a burden on foreign industry ; it may be supposed that Great Britain, at the period when the Navigation Act was passed, stood as fair a chance as Holland of being the carriers of the produce, at least of its own industry ; and that as the latter country had obtained and preserved a navy without navigation laws, Great Britain might have done the same. But we are to recollect that Holland stood in a peculiar situation ; having no manufactures or trade of her own, she was thus enabled to turn nearly her whole attention to the carrying trade, and to embark nearly her whole capital in it ; and a nation, like an individual, the attention, skill, industry, and capital of which are directed solely to one undertaking, will carry on that better, and at a cheaper rate, than any other nation can do. Great Britain, therefore, had only two modes of preserving herself from the encroachments of the Dutch on her carrying trade ; either by turning her attention and capital principally, or entirely to that branch, or by excluding the Dutch from it : the latter, in every point of view, was preferable ; and though it injured the commerce

of Great Britain in some degree, by raising the rate of freights, it did much less harm than a total change in the direction of her industry and capital would have done, while it equally well secured the main object, the encouragement of sailors and shipping.

2. The necessity of the first enactment of the Navigation Act flows from the observations which have been already made ; Holland, at that time, was the most formidable rival of Great Britain by sea ; and it was therefore wise to adopt such measures as should enable the latter to increase her navy, and cope with, if not overcome, her powerful rival.

3. With respect to the consequences which immediately resulted from the Navigation Act, there are different statements : at first there were loud complaints that we had not shipping enough to import from all parts, and yet were prohibited from getting goods and shipping from foreigners ; while, immediately before the passing of the Navigation Act, the complaint had been that our shipping were rotting, and our mariners had gone into the Dutch service. Sir Joshua Child, who published his treatise on trade in 1668, is so decidedly and warmly of opinion that the Navigation Act was highly beneficial to the nation, that he thinks it ought to be called *Charta Maritima* ; and in another place he observes, " that without this act we had not now been owners of one-half of the shipping or trade, nor should have employed one-half of the seamen we do at present ; " while Sir Roger Coke, in his " Discourse of Trade," published 1670, asserts, " that in two years after the Navigation Act of the Rump Parliament in 1651, the building of ships in England became one-third dearer than before, and that seamen's wages became so excessive dear that we have wholly lost the Muscovy and Greenland trade, whereby we gave the Dutch and other nations the power of driving the trade of the world."

These opinions and statements, however, may be reconciled ; there can be no doubt that the first result of the Navigation Act would be to increase the demand for British seamen and shipping, and of course to raise the price of ship-building, seamen's wages, and the rate of freight : this increased demand would, in time, create an increased supply ; and though the rate of freight probably did not come down so low, as it had been when the Dutch were allowed to be our carriers, yet the immediate very great rise would necessarily be temporary. It may be remarked, however, that one of the evils complained of by Sir Roger Coke, and which still exists, would not have been produced had the Restoration Parliament followed exactly the Navigation Act of the Long Parliament ; by the latter, liberty was allowed to purchase ships where they could be procured cheapest ; ship-building of course would not have been so much raised as Sir Roger Coke complains ; while the great object of the act, the increase of seamen, would have been more completely and effectually secured ; since, if ships had been bought where they could be procured cheapest, freights would have become more reasonable, and sailors increased in consequence.

4. There can be as little doubt that the Navigation Act has been beneficial to Great Britain, considered as a nation dependent for her safety and well-being on her maritime power, as that it has been prejudicial to her, considered as a nation purely commercial : the manner in which it operates then, in two such different ways, has already been pointed out. " That nation (as Adam Smith well observes) will be most likely to buy cheap, when, by the most perfect freedom of trade, it encourages all nations to bring to it the goods which it has occasion to purchase ; and for the same reason it will be most likely to sell dear, when its markets are thus filled with the greatest number of buyers." Now, the Navigation Act directly and expressly discourages or prevents foreign



foreign nations from bringing goods into Great Britain; and as the same author remarks, "if foreigners are hindered from coming to sell, they cannot always afford to come to buy, because coming without a cargo, they must lose the freight from their own country to Great Britain. By diminishing the number of sellers, therefore, we necessarily diminish that of buyers, and are thus likely not only to buy foreign goods dearer, but to sell our own cheaper, than if there was a more perfect freedom of trade."

Lastly, there can be as little doubt that under the circumstances in which Great Britain is at present placed, it would be highly impolitic and unsafe to alter essentially the navigation laws; she stands now more in need of maritime defence than she ever did; and the means of that maritime defence require more than ever to be preserved untouched by the encroachments of foreign nations; since, if the Navigation Act was abrogated, the operation of our taxes is such, that foreign ships, in almost every case, would be able to carry goods at a much lower rate of freight than our own ship-owners could do. But, on the other hand, it may well be questioned, whether, at present, the regulation of the Long Parliament should not be adopted, and full liberty given to purchase ships wherever they could be found cheapest: as has been already remarked, freight would thus become more reasonable, and consequently the great object of the navigation laws would be more completely answered, while our merchants would have less reason to complain: if this alteration were made, the loss of the merchants would be entirely for the benefit of the nation; now it is only partly for the benefit of the nation, while by benefiting at the same time the ship-builders, that benefit is essentially lessened.

NAVIGATION, *Sub-marine*, or the art of sailing under water, is mentioned by Mr. Boyle as the desideratum of the art of navigation. This was attempted, and successfully, according to him, by Cornelius Drebbel; several persons who were in the boat breathing freely all the time. See DIVING-bell.

NAVIGATION, *Inland*. See CANAL.

NAVIGATOR, in the *Sea Language*, usually denotes a person capable of conducting or guiding a ship to any place desired.

NAVIGATORS is an appellation used for the labourers who work at canal-digging.

NAVIGATORS' Islands, in *Geography*, a group of islands in the South Pacific ocean. This group, according to La Perouse (*Voyage*, vol. ii. p. 191.) consists of ten islands, viz. Opoun, the most easterly, Léoné, Fanfoué, Maouna, Oyolava, Calinaffé, Pola, Shika, Ossamo and Ouera. This celebrated navigator saw the seven first of these islands, but the position of the three last was unknown; though in the sequel of his voyage, he had reason for concluding that two of the three might be Cocoa and Traitor islands, named by Capt. Wallis Boscawen and Keppel. (See BOSCAWEN'S *Island*.) These two islands are separated by a channel about three miles wide, intersected by an islet at the north-easterly point of Traitors' island, which is low and flat, and has only a high hill towards the middle; it is divided into two parts by a channel 150 fathoms wide at the mouth. These three islands form, according to La Perouse, part of the ten that compose the Navigators' archipelago. The discovery of this group of islands has by several geographers been attributed to Roggewein in 1721; two of these islands lying in S. lat. 15°. W. long. 170°, he called Baumen's or Beauman's islands; and a third island, denominated Single island, lies in S. lat. 13° 41'. W. long. 171° 30'. These three islands are said to be those which Bougainville calls the isles of Navigators. But La Perouse is of opinion that neither the histo-

rical particulars relating to their inhabitants, nor the geographical position assigned to these islands by the historian of Roggewein's voyage, corroborates the notion that Beauman's islands are the same with those to which Bougainville has given the name of Navigators' islands.

These islands form one of the finest archipelagoes of the South sea, and are as interesting on account of their arts, production, and population, as those of the Society or Friendly islands, well described by the English navigators. As to the morality of the people, La Perouse does not hesitate to affirm, that it would be ineffectual to endeavour to excite by kindness the gratitude of their ferocious souls, which are only to be kept in awe by fear. They are tall and well formed, their usual height being five feet nine, ten, or eleven inches; but their stature is less surprising than the colossal proportions of the different parts of their bodies. Their countenances expressed a sentiment of disdain, which was not easily subdued. The bodies of the men are painted or tattooed to such a degree, that they seemed to be clothed, although they were almost naked, as they had only a girdle of sea-weeds round their loins, hanging down to their knees. Their hair is very long, which they twist many times round the head, and thus add to the ferociousness of their countenances, always expressive either of surprise or anger. The least dispute among them is followed by blows of sticks, clubs, or paddles, which often cost the combatants their lives; as a consequence of their quarrels, they are covered with scars. The size of the women corresponds to that of the men; and the gross effrontery of the greater number of them, the indecency of their motions, and the disgusting offers they made of their favours, rendered them very proper for the mothers or wives of the male inhabitants. These people have certain arts, which they cultivate with success; to their huts they give an elegant form by means of tools made of very fine close kind of basaltes, in the form of an adze; and possessed of these they disdained the iron instruments that were tendered to them. For a few beads, they sold three-footed wooden dishes, cut out of the solid piece, and so polished as to have the appearance of being coated by the finest varnish. Their subsistence depends on the fruit trees and nutritious roots that grow around them, and also on their pigs, dogs, and fowls. They manufacture extremely fine mats and paper stuffs. They have cloth, composed of real thread procured from some filamentous plants, such as the nettle or flax; which cloth serves also for the sails of their canoes. Their dialect was similar to that of the people of the Society and Friendly islands; and La Perouse is of opinion that the inhabitants of the different islands of the South sea take their rise from Malay colonies. The descendants of the Malays, in these islands, have acquired a vigour, strength, stature, and proportion which they do not derive from their forefathers, but which is owing to the abundance of food, mildness of climate, and influence of physical causes, which has been producing effect during a long series of generations. The feudal government is preferred here, and serves to cherish and maintain that ferociousness and perfidiousness of disposition and manners, which characterise the inhabitants.

M. Bougainville has denominated these islands "Navigators" with sufficient reason: as all their voyages are made in canoes, and as they never walk, even from one village to another. Their villages are all situated in creeks on the sea-side, and have no paths besides those that serve for penetrating into the interior of the country. The islands visited by La Perouse and his companions were clothed up to the very summit with trees laden with fruit, on which wood-pigeons and turtle-doves of various colours reposed; here were



were also some beautiful parroquets, or species of black birds, and corn partridges. These islanders amuse their leisure hours by taming birds: their houses were full of wood-pigeons, which they bartered by hundreds, and they likewise fold 300 gallinules of the most beautiful plumage. Their canoes have outriggers, are very small, and hold no more, in general, than five or six persons. These Indians are such expert swimmers, that their canoes seem only to serve them as resting-places. Their sails are of mat or matted cloth. Their only modes of fishing are with hook and line, and a sweep-net: their baits are curiously wrought of mother-of-pearl and white shell. These islands, says La Perouse, appear to be volcanic: the stones on the bank being only pieces of lava, round basaltic, or coral, by which the whole island is surrounded. Their villages are very agreeably situated: the houses are built under fruit trees, which keep them delightfully cool. They are seated on the sides of brooks running down from the mountains; and they are surrounded by lattices, which they open to the windward and shut on the sunny side, in order to protect them from the heat.

These islands abound in pigs, dogs, fowls, birds, and fish, and are covered with cocoa, goyava, and banana trees, and another tree bearing a large almond which is eaten roasted, much resembling the chestnut in flavour. Sugar-canes grow spontaneously on the banks of the rivers. The population of these islands is very considerable. The eastern ones, viz. Opoun, Léoné, and Fanfoué, are small; the two last are only about five miles in circumference; but Maouna, Oyolava, and Pola, must be reckoned among the largest and most beautiful islands of the South sea. S. lat.  $14^{\circ} 20'$ . W. long.  $169^{\circ}$ . See MAOUNA.

NAVIS, *Argo NAVIS*, or the ship *Argo*, in *Astronomy*, a constellation of the southern hemisphere. See ARGO.

NAUL, in *Geography*, a small town of the county of Dublin, Ireland, on the confines of the county of Meath, near which is a romantic glen, overhung with rocks, through which the little stream runs which is the boundary of the two counties, and over this glen the old castle of Naul is boldly situated. Naul is in Fingal, and is 14 miles N. of Dublin. Carlisle.

NAULIUM, in *Antiquity*, a musical instrument, otherwise called *Nablum*; which see.

NAULUM, among the Romans, properly signified *freight*, whence it is used to denote a piece of money put into the mouth of a person deceased, to pay Charon the ferryman for his passage: this piece was to be of the current coin of the emperor then reigning; so that from it the time of the person's death may be known.

NAUMACHIA, NAUMACHY, from *ναυα*, *ship*, and *μαχη*, *fight*, a spectacle, or show, among the ancient Romans, representing a sea-fight.

NAUMACHIA is also used, by some, for a circus encompassed with seats and porticos; the pit of which, serving as an arena, was filled with water, by means of pipes, for the exhibiting of sea-fights.

There were several of these naumachias at Rome: three built by Augustus, one by Claudius, and another by Domitian. Nero's naumachia served for the reverse of his medals.

NAUMANN, JOHANN AMADEUS, in *Biography*, principal maestro di cappella to the elector of Saxony, born near Dresden in 1745. This composer had no originality; he had formed himself on the stilted style of Italy in the middle of the last century, before its coalition with the German school had been of service to both. He died at Dresden in 1801.

NAUMBERG, in *Geography*, a town of Germany, in the circle of the Lower Rhine, seated on the Eider; 14 miles W.S.W. of Cassel. N. lat.  $51^{\circ} 15'$ . E. long.  $9^{\circ} 7'$ .

NAUMBURG, a city of Saxony, and capital of a bishopric, founded by the emperor Otho I. in 968 at Neitz, the cathedral church of which was removed to Naumburg in 1029. This town lies in a pleasant and fertile vale, not far from the river Saale. It consists of the town itself, subject to the jurisdiction of its council, a citadel, three churches, and a town-school; 80 miles W. of Dresden. N. lat.  $51^{\circ} 8'$ . E. long.  $11^{\circ} 54'$ .

NAUMBURG *am Bober*, a town of Silesia, in the principality of Sagan, on the Bober; 12 miles N. of Sagan. N. lat.  $51^{\circ} 11'$ . E. long.  $15^{\circ} 27'$ .

NAUMBURG *am Queis*, a town of Silesia, in the principality of Jauer, at the conflux of the Ivenitz and Queis; 34 miles W. of Jauer. N. lat.  $51^{\circ} 12'$ . E. long.  $15^{\circ} 26'$ .

NAUMS, a lake of Norway, in the province of Drontheim; 114 miles N.N.E. of Drontheim.

NAUNA, a town of the island of Cuba; 15 miles S.W. of Spiritu Santo.

NAUNTON, Sir ROBERT, in *Biography*, a statesman and historian in the seventeenth century, was educated at Cambridge, and became professor and public orator of that university. He attracted the notice of James I., and was brought into his employment. He rose to the offices of secretary of state, and master of the court of guardians, which he filled with reputation and honour. In 1620 he lost his place as secretary, through the displeasure of the duke of Buckingham, and no further account is given of him. He wrote a work, entitled "Fragmenta Regalia," or the true character of queen Elizabeth and her favourites, first published in 1641, and re-published by Sir Francis Walsingham's "Arcana Aulica." It is esteemed a faithful and judicious performance.

NAVOLOK, in *Geography*, a cape on the N.W. coast of Nova Zembla. N. lat.  $76^{\circ} 20'$ . E. long.  $54^{\circ} 14'$ .

NAVOOK, a town of Persia, in the province of Meeran; 70 miles W.N.W. of Kelveh.

NAUPACTES, in *Ancient Geography*, a town of Greece, situated on the gulf of Corinth, in the country of the Locri-Ozoli. The Athenians drove the Locrians from this city, and they surrendered it to the Messenians, who were themselves expelled by the Lacedæmonians, and these again were forced to abandon it to those by whom they were expelled. Diana, surnamed Ætolian, had a temple in this city, in which was her statue of white marble, in the attitude of a female who draws her bow. Here was also a grotto consecrated to Venus, to which those who wished to marry repaired to make their vows. Esculapius had also a temple in this city; but it was in ruins in the time of Pausanias, l. x. Phoc. c. 38.

NAUPBARA, in *Geography*, a town of Hindoostan, in the circar of Cicacole; five miles N.E. of Tickely.

NAUPENT, a town of Hindoostan, in the circar of Guntoor; eight miles S. of Innaconda.

NAUPLIA, in *Ancient Geography*, *Napoli di Romani*, a town of the Argolides on the Argolic gulf, S.E. of Temenium. This, according to Strabo, was the port of the Argians, and in the time of Pausanias the docks into which vessels retired were visible. It had a temple of Neptune, and a fountain called Canathe, in which Juno is said to have bathed every year, in order to recover her virginity, allusion being made to one of the mysteries of this goddess. Here was consecrated the head of an ass, which was sculptured on a stone; in honour of this animal, who by breaking off the under branches of a vine, which thus became



came more fruitful, taught the necessity of trimming the vine.

NAUPLIUS, in *Natural History*, a name by which some authors have called the nautilus, as well the papyraceous as the chambered kind,

NAURZIM, in *Geography*, a lake of Russia, about 48 miles in circumference. N. lat.  $51^{\circ} 50'$ . E. long.  $64^{\circ} 44'$ .

NAUS, a town of the county of Tyrol; 16 miles W. of Bolzano.

NAUSA, a town of South America, in the audience of Quito; 30 miles N.N.E. of Guayaquil.

NAUSARY, a town of Hindoostan, about ten leagues from Surat, which is of small extent, but contains a very considerable cotton manufactory. It has a fort which belongs to the Mahrattas, and is surrounded with pagodas, gardens, and beautiful flower-plats. In the neighbourhood of this town the only animal used for the saddle is the ox.

NAUSEA, in *Medicine*, signifies that slighter degree of sickness at the stomach, which does not actually give rise to a discharge of its contents;—a propensity to vomit, which may occur with or without actual puking. The word is usually derived from *navis*, a ship, and was probably originally applied to the sickness excited by sailing.

Nausea is produced by various causes; sometimes by those circumstances which act directly upon the stomach itself; sometimes by those which influence the stomach indirectly, through the medium of other organs of the body, with which it is connected by sympathy; and sometimes through the medium of the mind.

The nausea which originates from affections of the stomach itself, occurs under various circumstances. It is not unfrequently one of the symptoms of dyspepsia, or indigestion, and arises either from the irritation of the ordinary food, when that is taken in greater quantity than the enfeebled condition of the stomach is capable of digesting; or from the use of articles of diet which are difficult of solution, which tend to generate acidity or other acrimonious humours, or which offend by some acrid or deleterious quality of their own;—or, lastly, from the morbid state of the secreted fluids in the stomach, which irritate its nervous coat, like the offensive substances that are taken in. See INDIGESTION.

But the sympathetic sources of nausea are perhaps still more numerous. The brain is seldom materially affected by any serious irritation or derangement, without deranging the stomach by sympathy: thus, sickness at the stomach is a common symptom of every degree of local injury of the head, in which pressure or concussion of the brain is occasioned; it accompanies inflammation of the brain and its membranes, the pressure of water in the ventricles, or of other morbid effusion or growth within the cranium; as well as the opposite state or inanition of the vessels of the brain, as in syncope, or after great losses of blood. The other organs, with which the stomach is often sympathetically deranged, and sickened, are chiefly the kidneys and the uterus. Thus nausea is a common concomitant of inflammation in the kidneys, or of the irritation of gravel or of a stone lodged in these organs, and becomes one of the diagnostic marks, by which disease in the kidneys is distinguished from other painful affections of the loins. Sympathetic nausea is also a frequent concomitant of uterine irritation or disorder; thus it is one of the most frequent symptoms of the beginning distention of the uterus in pregnancy, and accompanies inflammation and other painful conditions of that organ.

The influence of the mind alone is likewise capable of exciting nausea and even its ultimate degree, vomiting. The

sight, or even the description or imagination, of loathsome and offensive objects and actions, will produce this effect on the stomach of many individuals of refined habits, or who are unaccustomed to such objects.

It is not easy to account for that variety of sickness, which is produced by certain kinds of motion of the body, such as swinging, whirling, and the undulating motion of a ship at sea. It seems, however, to be referrible principally to the sympathetic connection between the stomach and brain; i. e. to the vertigo or dizziness produced in the latter, through the medium of the organs of vision, by these unusual motions. Sickness and vertigo are mutually productive of each other, like some other affections of the head and stomach. When the stomach is rendered sick by wine, or nauseous drugs, a giddiness is perceived, even with closed eyes, and *vice versa*. Dr. Darwin mentions a striking fact, illustrative of the effect of this dizziness, produced through the organs of sight, in bringing on and preventing seasickness. “In an open boat passing from Leith to Kinghorn in Scotland, a sudden change of wind shook the undistended sail, and stopt our boat; from this unusual movement the passengers all vomited except myself. I observed, that the undulation of the ship, and the instability of all visible objects, inclined me strongly to be sick; and this continued or increased, when I closed my eyes, but as often as I bent my attention with energy on the management and mechanism of the ropes and sails, the sickness ceased; and recurred again as often as I relaxed this attention.” (*Zoonomia*, vol. i. sect. xx. 5.) Similar nausea, though less in degree, is commonly an attendant on the vertigo produced by looking from a high tower, or attempting to cross a narrow path, unsupported, over a deep chasm.

With respect to the cure of nausea, then, it is obvious, that it will be as various as the causes which induce it; and that it is only in the cases, where it results primarily from derangement of the stomach, that any material success can be obtained by remedies directed to that organ. In these cases, the nature of the cause must determine the kind of remedy to be administered. When there is obviously a production of acidity, it will be relieved by the absorbent earths, such as chalk and magnesia, and by the alkalis, as prepared soda, soda-water, or potash. The mixture of an alkali with lemon-juice, taken in the act of effervescence, affords one of the most effectual means of relief in some cases of sickness, when there is considerable weakness and irritability of the stomach. And in those cases, in which there is also pain in the stomach, especially after taking food, opiates may be given, in combination with aromatics, with great advantage. In all such cases, however, it is clear that much must be done by the regulation of diet, both in respect to quantity and quality,—by taking only light and digestible food, in moderate portions,—and by using regular and moderate exercise. Let it be observed, too, that the practice of resorting to emetics on all occasions of nausea, is injudicious; and probably aggravates the evil tenfold, by augmenting the irritability and feebleness of the stomach, and thus laying the foundation for permanent imbecility in that important organ.

NAUSSA, in *Geography*, a sea-port town situated on the N.E. coast of the island of Paros, fortified by the Russians when they were in possession of the Archipelago.

NAUSTATHMUS, in *Ancient Geography*, a port of Sicily. Plin. l. iii. c. 8.—Also, a port of Africa in the Pentapolis, according to Ptolemy, placed by Mela in the Cyrenaica.—Also, a port at the mouth of the river Indus.—Also, a port of Asia, in the environs of the Troade, according to Strabo.

NAUST-



NAUSTEDAL, in *Geography*, a town of Norway, in the province of Bergen; 70 miles N. of Bergen.

NAUTACA, in *Ancient Geography*, a town of Asia, in Sogdiana. Arrian. l. iii.; the inhabitants of which were called "Nautacæ."

NAUTAN, in *Geography*, a town of Hindoostan, in Oude; 30 miles E. of Gooracpour.

NAUTAPOOL, a town of Bengal; seven miles S. of Burwah.

NAUTICAL PLANISPHERE, a description of the terrestrial globe upon a plane, for the use of mariners. See PLANISPHERE, and *Sea-CHART*.

NAUTICAL *Chart*. See *Sea-CHART*.

NAUTICAL *Compass*. See COMPASS.

NAUTICUS, in *Anatomy*, a muscle, called also tibialis posticus.

NAUTILUS, in *Natural History*, a genus of the class and order Vermes Testacea. The animal is a kind of sepia: the shell is univalve, divided into several compartments, communicating with each other by an aperture. This genus, which is sometimes confounded with the argonauta, or paper nautilus, on account of the similarity of their names, includes thirty-one species, which are separated into three divisions; viz. A, of which the shells are spiral, rounded, with contiguous whorls, comprising fifteen species, of which nine are common to our coasts, and found chiefly on the Sandwich shore, or on Sheppy island. In the division B, the shells are spiral, rounded, with separate whorls: the number of species is three; these are all foreign. In C the shells are all elongated and straightish. There are thirteen species in this division.

#### A. *Spiral, rounded, with contiguous Whorls.*

##### Species.

POMPILIUS. Aperture of the shell heart-shaped, with obtuse and smooth whorls. This species is found in the Indian and African oceans; it is sometimes very large, and finely variegated with brown flexuous streaks, spots, and marks under the outer covering, which is white. Within it is of a most beautiful pearly gloss. Of this shell the inhabitants of the East make their drinking cups.

\* CALCAR. Aperture of the shell linear; the whorls have elevated joints. It is found on Sheppy island; is minute, white, and opaque.

\* CRISPUS. Aperture of the shell fsemicordate; joints of the whorls crenate. This is an inhabitant of the Mediterranean and of Sheppy island, and is very minute. Independently of the specific character just given, the shell is opaque, white, umbilicate on each side, granulate and marked with flexuous striæ; the back is carinate; the syphon central, and the chambers a little inflected in the middle.

\* BECCARI. Aperture of the shell obovate, the whorls twisted with deep joints. There is a variety, of which the shell is compressed, with a linear aperture and contiguous whorls marked with the elevated striæ; many-rayed. This is found on the shores of many countries. The shell is depressed, minute; of a fine pellucid crimson while the fish is alive, but of a dull white when dead.

\* LÆVIGATULUS. Shell spiral, with smooth joints. This species is found at Sandwich, and is very minute. The shell is semipellucid, white, and glossy.

\* DEPRESSULUS. The shell of this species is spiral, slightly umbilicated on each side, with many depressed joints. Found at Reculver, is minute and very rare. The shell is opaque and white.

\* UMBILICATULUS. Shell spiral, umbilicate, with spiral joints. It is found at Sandwich, is white, opaque, and minute.

\* CRASSULUS. Shell spiral, thick, umbilicate on each side, with fine joints. It is found at Reculver, is very rare, white, opaque, and minute.

\* LOBATULUS. Shell spiral, lobate, the spires rounded on one side and depressed on the other. It is found at Whitstable, is minute, white, and opaque.

\* CARINATULUS. Shell oblong, carinate, with a narrow oval aperture. It is found at Sandwich, and is rare, minute, white, and opaque.

\* SUBARCUATULUS. The shell of this species is a little bending, with raised joints. It is found at Sheppy; minute, opaque, and brown.

BALTHICUS. Shell white, convex, with a linear aperture; first whorl far exceeding the others in size. It inhabits the Baltic, adhering to the roots of fuci; it resembles the M. beccarii; the shell is sometimes polished and opaque; frequently pellucid.

HELICITES. In this the whorls of the shells are concealed. It is found, in a fossil state, on St. Peter's mountain at Maestricht, and is very small; the shell is sometimes convex, sometimes depressed, smooth, or striate.

RUGOSUS. Apertures of the shell linear; whorls compressed, with thickened margins. It inhabits the Southern ocean; is very small, white, somewhat depressed; the internal divisions a little prominent outwardly, and appearing like transverse wrinkles.

UMBILICATUS. Aperture of the shell compressed and linear; the whorls are compressed; the umbilicus concave. It is found in Croatia; is minute, obliquely jointed, with transverse grooves, answering to the divisions within, particularly at the keel.

#### B. *Spiral, rounded, with separated Whorls.*

SPICULA. Aperture of the shell orbicular, whorl cylindrical. It inhabits the American and Indian ocean, is about an inch in diameter; is whitish and shining within, like mother-of-pearl; it is orbicular, the whorls gradually decreasing inwards, the first a little straight; the syphon is contiguous to the walls of the shells.

SPENGLERI. Shell smooth, with four conic tubercles. It inhabits India, and is very minute.

UNGUICULATUS. The shell of this species is diaphanous, the middle partitions protuberant outwards; the surface has six conical tubercles. It inhabits India; is very minute; thin, white, polished, and slightly ribbed.

#### C. *Elongated and straightish.*

SEMILITUUS. The shell is incurved, spiral at the tip; the whorls are contiguous. It inhabits Croatia; is minute and convex; the partitions appearing outwardly, sometimes umbilicate.

LITUUS. Shell subconic, with globular divisions growing gradually less; the tip is incurved and spiral. It is found in the Red sea, frequently in a fossil state.

OBLIQUUS. Shell straight, with a slight curvature; the divisions are obliquely striate. It inhabits the Mediterranean and Adriatic.

RAPHIANISTRUM. Shell sub-cylindrical, with thick divisions marked with twelve elevated striæ; the syphon is central and regular.

RAPHIANUS. Shell jointed, the divisions thick, with seventeen elevated striæ; syphon sub-lateral and oblique. It is found in the Mediterranean and Adriatic, and is very minute.

GRANUM. Shell ovate-oblong, with thick divisions marked with eight interrupted elevated striæ; syphon oblique. It is found in the Mediterranean, and distinguished from



from the left in having striæ at the point of the divisions a little contracted.

**RADICULA.** Shell oblong-ovate, with thick glabrous divisions. It inhabits the Adriatic.

**FASCIA.** Shell with striate divisions and smooth elevated joints. Found in the Adriatic.

**INEQUALIS.** Shell cylindrical, with eight divisions; the second and third very short; the aperture margined.

**SIPHUNCULUS.** Shell smooth, with cylindrical remote divisions; the joints tapering and cylindrical. Inhabits the seas about Sicily, and is found adhering to coral rocks.

**LEGUMEN.** Shell compressed, jointed, and margined at one end; the syphon is lateral. It inhabits the Adriatic.

**ORTHOCERA.** Whorls of the shell with carinate striæ. It inhabits the ocean, and is frequently found fossil.

**BELEMNITA; Thunder-stone.** The shell is equal, smooth, conic, and acute. It is found in a fossil state in most parts of Europe, and has derived its English name from a notion that it is a thunder-bolt, and never found but after a storm. The shell varies in size from half an inch to eight inches; it is conical, a little transparent, and when burnt or rubbed it smells like rasped horn. Several fine specimens of the nautilus have been dug out of the hill at Highgate. See the article CONCHOLOGY.

**NAUTPOUR,** in *Geography*, a town of Bengal, on the Coofah; 36 miles N.N.W. of Purneah. N. lat. 26° 18'. E. long. 87° 14'.

**NAVUK,** a town of Persia, in the province of Mecran; 80 miles S. of Arokhage.

**NAVY,** the fleet or shipping of a prince or state. See **FLEET.**

The royal navy of England hath ever been its greatest defence and ornament; it is its ancient and natural strength; the floating bulwark and "wooden walls" of the island; an army from which, however strong and powerful, no danger can ever be apprehended to liberty; and accordingly it hath been assiduously cultivated, even from the earliest ages. (See *Larus of OLERON.*) And yet, so vastly inferior were our ancestors in this respect to the present age, that even in the maritime reign of queen Elizabeth, sir Edward Coke, (3 Inst. 50.) thinks it matter of boast, that the royal navy of England then consisted of *thirty-three* ships. The present condition of our marine is in great measure owing to the salutary provisions of the statutes called the navigation acts, by which the constant increase of British shipping and seamen was not only encouraged, but rendered absolutely necessary. See **NAVIGATION ACTS.**

Several articles and orders for the government of the navy are established by 13 Car. II. c. 9. and 22 Geo. II. c. 22. and amended by 19 Geo. III. c. 17. which are as follow:

1. Officers are to cause public worship, according to the liturgy of the church of England, to be solemnly performed in their ships, and take care that prayers and preaching by the chaplains be performed diligently, and that the Lord's day be observed. 2. Persons guilty of profane oaths, cursing, drunkenness, uncleanness, &c. to be punished as a court martial shall think fit. 3. If any person shall give or hold intelligence to or with an enemy *without leave*, he shall suffer death. 4. If any letter or message from an enemy be conveyed to any in the fleet, and he shall not in *twelve hours* acquaint his superior officer with it, or if the superior officer, being acquainted therewith, shall not reveal it to the commander-in-chief, the offender shall suffer death, or such punishment as a court martial shall impose. 5. Spies and persons endeavouring to corrupt any one in the fleet, shall suffer

death, or such punishment as a court martial shall impose.

6. No person shall relieve an enemy with money, victuals, or ammunition, on like penalty. 7. All papers taken on board a prize shall be sent to the court of admiralty, &c. on penalty of forfeiting the share of the prize, and such punishment as a court martial shall impose. 8. No person shall take out of any prize any money or goods, unless for better securing the same, or for the necessary use of any of his majesty's ships, before the prize shall be condemned; upon penalty of forfeiting his share, and such punishment as shall be imposed by a court martial.

9. No person on board a prize shall be stripped of his clothes, pillaged, beaten, or ill-treated, upon pain of such punishment as a court martial shall impose. 10. Every commander, who, upon signal or order of fight, or sight of any ship which it may be his duty to engage, or who, upon likelihood of engagement, shall *not make necessary preparations* for fight, and encourage the inferior officers and men to fight, shall suffer death, or such punishment as a court martial shall deem him to deserve. And if any person shall treacherously or cowardly yield or cry for quarter, he shall suffer death.

11. Every person who shall not obey the orders of his superior officer, in time of action, to the best of his power, shall suffer death, or such punishment as a court martial shall deem him to deserve. 12. Every person, who, in time of action, shall withdraw or keep back, or not come into the fight, or do his utmost to take or destroy any ship which it shall be his duty to engage, and to assist every ship of his majesty or his allies, which it shall be his duty to assist, shall suffer death.

13. Every person, who through cowardice, &c. shall forbear to pursue the chase of an enemy, &c. or shall not assist or relieve a known friend in view, to the utmost of his power, shall suffer death. 14. If any person shall delay or discourage any action or service commanded, upon pretence of arrears of wages, or otherwise, he shall suffer death, or such punishment as a court martial shall deem him to deserve. 15. Every person who shall desert to the enemy, or run away with any ship, ordnance, &c. to the weakening of the service, or yield up the same cowardly or treacherously to the enemy, shall suffer death.

16. Every person who shall desert, or entice others so to do, shall suffer death, or such punishment as a court martial shall think fit. If any commanding officer shall receive a deserter, after discovering him to be such, and shall not with speed give notice to the captain of the ship to which he belongs, or if the ship is at a considerable distance, to the secretary of the admiralty, or commander-in-chief, he shall be cashiered. 17. Officers and seamen of ships, appointed for convoy of merchant ships, or of any other, shall diligently attend upon that charge according to their instructions; and whosoever shall not faithfully perform their duty, and defend the ships in their convoy, or refuse to fight in their defence, or run away cowardly, and submit the ships in their convoy to hazard, or exact any reward for convoying any ship, or misuse the master or mariners, shall make reparation of damages, as the court of admiralty shall adjudge, and be punished criminally by death, or other punishment, as shall be adjudged by a court martial.

18. If any officer shall receive or permit to be received on board any goods or merchandize, other than for the sole use of the ship, except gold, silver, or jewels, and except goods belonging to any ship which may be shipwrecked, or in danger thereof, in order to the preserving them for the owners, and except goods ordered to be received by the lord high admiral, &c. he shall be cashiered, and rendered incapable of farther service. 19. Any person making or endeavouring to make any mutinous assembly, shall suffer death. Any person uttering words of



sedition or mutiny shall suffer *death*, or such punishment as a court martial shall deem him to deserve. If any officer, mariner, or soldier, in or belonging to the fleet shall behave himself with contempt to his superior officer, *being in the execution of his office*, he shall be punished according to the nature of his offence by the judgment of a court martial. 20. Any person concealing any traitorous or mutinous practice or design, shall suffer *death*, or such punishment as a court martial shall think fit. Any person concealing any traitorous or mutinous words, or any words, practice, or design, tending to the *hindrance of the service*, and not forthwith revealing the same to the commanding officer; or being present at any mutiny or sedition, shall not use his utmost endeavours to suppress the same, shall be punished as a court martial shall think he deserves. 21. Any person finding cause of complaint of the unwholesomeness of victuals, or upon other just ground, shall *quietly* make the same known to his superior, who, as far as he is able, shall cause the same to be presently remedied; and no person upon any such or other pretence shall attempt to stir up any disturbance, upon pain of such punishment as a court martial shall think fit to inflict. 22. Any person striking any his superior officer, or drawing or offering to draw or lift up any weapon against him, *being in the execution of his office*, shall suffer *death*. And any person presuming to quarrel with any his superior officer, *being in the execution of his office*, or disobeying any lawful command of any his superior officer, shall suffer *death*, or such other punishment as shall be inflicted upon him by a court martial. 23. Any person quarrelling or fighting with any other person in the fleet, or using reproachful or provoking speeches or gestures, shall suffer such punishment as a court martial shall impose. 24. There shall be no wasteful expence or embezzlement of any powder, shot, &c. upon penalty of such punishment as by a court martial shall be found just. 25. Every person burning or setting fire to any magazine, or store of powder, ship, &c. or furniture thereunto belonging, not then appertaining to an enemy, shall suffer *death*. 26. Care is to be taken that through wilfulness or negligence no ship be stranded, run upon rocks or sands, or split or hazarded; upon pain of *death*, or such punishment as a court martial shall deem the offence to deserve. 27. No person shall sleep upon his watch, or negligently perform his duty, or forsake his station, *upon pain of death*, or such punishment as, &c. 28. Murder; 29. And buggery or sodomy shall be punished with *death*. 30. Robbery shall be punished with *death*, or otherwise, as a court martial shall find meet. 31. Every person *knowingly* making or signing, or commanding, counselling, or procuring the making or signing any false muster, shall be cashiered, and rendered incapable of farther employment. 32. Provost martial refusing to apprehend or receive any criminal, or suffering him to escape, shall suffer such punishment as a court martial shall deem him to deserve. And all others shall do their endeavours to detect and apprehend all offenders, upon pain of being punished by a court martial. 33. If any flag-officer, captain, commander, or lieutenant, shall behave in a scandalous, infamous, cruel, oppressive, or fraudulent manner, *unbecoming his character*, he shall be dismissed. 34. Every person in actual service and full pay, guilty of mutiny, desertion, or disobedience, in any part of his majesty's dominions on shore, when in actual service, relative to the fleet, shall be liable to be tried by a court martial, and suffer the like punishment as if the offence had been committed at sea. 35. Every person in actual service and full pay, committing upon shore, in any place out of his majesty's dominions, any crime punish-

able by these articles, shall be liable to be tried and punished as if the crime had been committed at sea. 36. All other crimes not capital, not mentioned in this act, shall be punished according to the laws and customs used at sea. No person to be imprisoned for longer than two years. Court martial not to try any offence (except the 5th, 34th, and 35th articles) not committed upon the main sea, or in great rivers beneath the bridges, or in any haven, &c. within the jurisdiction of the admiralty, or by persons in actual service and full pay, except such persons and offences, as in the 5th article; nor to try a land-officer or soldier on board a transport ship. The lord high admiral, &c. may grant commissions to any officer commanding in chief any fleet, &c. to call courts martial, consisting of commanders and captains. And if the commander-in-chief shall die or be removed, the officer next in command may call courts martial. No commander-in-chief of a fleet, &c. of more than five ships, shall preside at any court martial in foreign parts, but the officer next in command shall preside. If a commander-in-chief shall detach any part of his fleet, &c. he may empower the chief commander of the detachment to hold courts martial during the separate service. If five or more ships shall meet in foreign parts, the senior officer may hold courts martial and preside thereat. Where it is improper for the officer next to the commander-in-chief to hold or preside at a court martial, the third officer in command may be empowered to preside at or hold a court martial. No court martial shall consist of more than *thirteen*, or less than *five* persons. Where there shall not be less than three, and yet not so many as five of the degree of a post captain, or superior rank, the officer who is to preside may call to his assistance as many commanders under the degree of a post captain, as, together with the post captains, shall make up the number five, to hold the court martial. After trial begun, no member of a court martial shall go on shore, until sentence, except in case of sickness, upon pain of being cashiered. Proceedings shall not be delayed, if a sufficient number remain to compose the court, which shall sit from day to day (except Sunday), till sentence be given. The judge advocate, and all officers constituting a court martial, *shall be upon oath*. Persons refusing to give evidence may be imprisoned. Sentence of death within the Narrow Seas (except in case of mutiny) shall not be put in execution till a report be made to the lord high admiral, &c. Sentence of death beyond the Narrow Seas, shall not be put in execution but by order of the commander-in-chief of the fleet, &c. Sentence of death in any squadron, detached from the fleet, shall not be put in execution (except in case of mutiny), but by order of the commander of the fleet, or lord high admiral, &c. And sentence of death passed in a court martial, held by the senior officer of five or more ships met in foreign parts (except in case of mutiny) shall not be put in execution but by order of the lord high admiral, &c.

The powers given by the said articles shall remain in force with respect to crews of ships wrecked, lost, or destroyed until they be discharged or removed into another ship, or a court martial shall be held to inquire of the causes of the loss of the ship. And if upon inquiry it shall appear, that all or any of the officers and seamen did their utmost to save the ship, and behaved obediently to their superior officers, their pay shall go on: as also shall the pay of officers and seamen taken by the enemy, having done their best to defend the ship, and behaved obediently. If any officer shall receive any goods on board contrary to the 18th article, he shall farther forfeit the value of such goods, or 500*l.* at the election



of the informer; one moiety to the informer, the other to Greenwich hospital. For other regulations relating to the navy, see MARINERS.

For the method of supplying the navy, see *MANNING the Fleet*.

The royal navy of Great Britain is conducted, under the direction of the lords of the admiralty, by seven commissioners, and the following principal officers, who compose the board for managing the business of the navy-office, *viz.* comptroller of the navy, who attends and controls the payment of all wages, is to know the rates of stores, &c. There is also a deputy comptroller. Surveyor of the navy, who is to know the state of all stores, to supply what is wanting, to estimate repairs, charge boatswains, &c. with the stores they receive, &c. There have been generally two joint-surveyors. Clerk of the acts, whose business is to record all orders, contracts, bills, warrants, &c. Comptroller of the treasurer's accounts. Comptroller of the victualling accounts. Comptroller of the store-keeper's accounts. In time of war, or great naval exertion, there are other additional extra-commissioners. There are also commissioners for Deptford and Woolwich, and also others for the out-ports, residing at Chatham, Sheerness, Portsmouth, and Plymouth; and in time of war commissioners are appointed to reside at some of the principal yards abroad, as Gibraltar, Halifax in Nova Scotia, Malta, Antigua, Jamaica, Cape of Good Hope, Madras, Bombay, &c. The treasurer of the navy is an officer, whose business is to receive money out of the exchequer, and to pay all the charges of the navy, by warrant from the principal officers. Each of these commissioners and officers has a number of subordinate clerks, with various salaries.

The navy was anciently victualled by contract; but the victualling is now under commissioners who keep their office in Somerset-house. See *VICTUALLING-Office*.

For the several yards belonging to his majesty's navy, see *Dock-Yards*.

NAVY and also *Vicuallling bills*, are bills or orders for the payment of money, issued by the commissioners of the navy and victualling offices, on the treasurer of the navy, &c. for stores and provisions purchased for the service of the navy.

That the contractors may not be losers by receiving these bills in payment, the current discount, at the time of making them out, is added to the amount of the goods delivered. The inconveniences arising from too great a number of these bills remaining undischarged at any time, have induced government, at different periods, to allow the proprietors to exchange them for a certain proportion of redeemable stock; and thus they become possessed of at least an equal security, with the advantage, that any part of it can be disposed of, as occasion may require, instead of being limited in this respect by the amount of the bills, which is generally considerable; the interest also becomes, by this mode of management, payable at certain periods; whereas the time of payment of the interest on the unfunded bills, previously to the regulation which took place in 1794, was always uncertain; no payment being made till the principal and the interest due upon it were discharged together. In 1794, all navy and victualling bills were made payable on a certain day, to be expressed in each particular bill, which day was not to exceed 15 months from the date of the bill, but the bills now issued from the navy and victualling offices are at 90 days date, bearing interest at *3d. per cent. per diem*, commencing from the date of the bill, and payable with it; and these bills being negotiated as bills of exchange, of course cannot be bought and sold at a discount. In negotiating these bills, the whole property-tax on the 90 days' interest is

deducted, and the interest for the time they have to run is taken on the nett sum.

The *NAVY-office* is the place where the chief business of the navy is transacted by the officers and commissioners.

NAVY denotes also the collective body of officers employed in his majesty's service.

NAVY, in *Geography*, a township of America, in Orleans county, state of Vermont.

NAVY-Hall, a settlement of Upper Canada, on the S. side of lake Ontario, at the head and W. side of Niagara river, which last separates it from Fort Niagara on the E. side, in the state of New York; 20 miles N. by W. of Fort Erie.

NAVY Island, an island in the middle of Niagara river, which separates it from Fort Slusher, on the E. bank of the river, and also from Grand island on the S. and S.E.; it is about one mile long, and of the same breadth, and 13 miles N. by E. from Navy-hall.

NAXIA, formerly *Naxos*, the largest of the Cyclades, and now the most agreeable, and the most tranquil island of the Grecian archipelago. Its fertility, more than its extent, being about 48 miles in circuit, has given occasion for its being called the "Queen." The ancients called it "Strongyle," and it is said to have been first peopled by Thracians, who being in want of women stole them from Thessaly, and among others Iphidemia and her daughter Pancratis. Alveus sent his sons Otus and Ophialtes to recover their mother Iphidemia; these brothers vanquished the Thracians, made themselves masters of the island, and called it "Dia." The Carians established themselves in this island, and gave it the name of Naxos, their king. Naxos, like the other islands of the archipelago, has experienced all the vicissitudes of fortune. It was formerly a powerful republic, but unable to maintain its independence; it was successively in alliance with the Athenians, conquered and ravaged by the Persians, tributary to the Romans, ceded by Marc Antony, after the battle of Philippi, to the Rhodians, afterwards subject to the emperors of the East, a long time governed by Venetian princes, and at length united to the Ottoman empire, under the reign of Selim II. The Naxians have retained a singular privilege of being governed by their own laws and customs; they have a municipal administration and judges of their own election. The inconsiderable importance of this island, and its remoteness from the coast of Asia, have not induced the Turks to establish themselves there. The Porte is content to send thither a waiwode to exercise the police, to gather the taxes, and to remit them to Constantinople. This island, more free and more independent than "Scio," is, nevertheless, far from having attained the same degree of prosperity. Trade is not sufficiently brisk, the culture of the lands is too much neglected, and the inhabitants possess little or no industry. Poor and haughty, and proud of their ancient nobility, they disdain commerce and agriculture; and thus these noble persons, boasting of their descent from the first Italian families, can bear to see their mansions pass into the hands of Plebeians, and their lands almost destitute of culture. The population of this island is said to exceed 10,000 persons. The capital contains nearly 2000; and the rest are scattered through 41 villages. The taxes which it pays for the lands, the karatch, and the customs, amount to about 1666*l.* sterling; exclusively of some other occasional disbursements. Although the number of Catholics is diminishing, so that they have scarcely 600 settled in the town, they have an archbishop, a coadjutor, six canons, a rector, and several curates. They have also a house of Lazarists for the education of youth, a convent of Capuchins, another of Cordeliers, and another of cloistered nuns. The number of the Greeks, on the contrary, is increasing, and their clergy



are much less numerous, and more rich than those of the Latins. The priests of these two forms of religion govern this country with a rod of iron, and, without intending it, render the inhabitants more malicious than devout, more litigious and quarrelsome, than just or humane.

Such is Olivier's account; but Sonnini's is very different. He says, that the principal inhabitants have preserved the urbanity, and noble and generous manners of their origin, and that they are distinguished by their affability and politeness, the fruits of a careful education. The women are no less amiable on account of their personal charms, than their other qualities.

This island is covered with high mountains, whose base is schistose or granitical. White marble, and hard calcareous stone, lie every where on the schistus, and give rise to a great number of springs, which water and fertilize the plains. The highest of these mountains is that of Jupiter, which the inhabitants call "Dia" or "Zia." In this mountain is a grotto of beautiful white marble, which has been much visited. The inhabitants regard it as a sacred spot, whither the Bacchants of the country came to celebrate their festivals and their mysteries. It presents now nothing very remarkable. Tournefort has described it in the "Voyage au Levant," vol. i. The summit of the mountains affords an extensive and interesting prospect. On the back of the mountains are some flocks of the little sheep of Italy and Provence, with short and coarse wool, and of a small species of goat, the flesh of which is eaten by the poor. The shepherds are peculiarly wild, and the women unsocialable. The females of Naxia, like those of Scio, take pleasure in holding in their mouths and chewing an inodorous substance, which is furnished by a plant known to botanists under the name of "atractylis gummifera." The root of the plant affords an aliment equally wholesome and nutritious. The hills and rising grounds of this island are covered with myrtles, arbutuses, lentisks, hypericums, favorys, thorny brooms, leguminous shrubs, and several species of rock roses, particularly that which furnishes the labdanum. The rivulets are bordered by oleanders, agnoscatuses, and plane-trees. In the east part of the island is a mine of emery. The inhabitants of Naxos practise the caprification of the fig, and they cultivate the vine. Their wine has been generally commended. Athenæus, speaking of it in ancient times, compares it to the nectar of the gods. Olivier says, that it is generally of an indifferent quality, because they know neither how to make nor how to preserve it. The island furnishes wheat, kidney-beans, garden-beans, and a few other legumes for the home consumption. Barley, which is much more abundant, is annually exported. The oil is of an indifferent quality. Oranges, lemons, and bergamot-citrons, are less plentiful than they might be, as there is no town sufficiently near that furnishes a great consumption. The peaches, apricots, pomegranates, pines, plums, walnuts, almonds, and figs, are consumed in the island. Naxos has sheep and goats for the wants of the inhabitants, a few small-sized oxen for husbandry, together with mules and asses for draught. The wool is of bad quality, and wholly consumed in the country. Cheese is an article of exportation. Cotton is but little cultivated, which is also the case with silk and flax. The honey and wax are consumed in the island. To the south of the town is a small faltern, whence the capital is supplied with salt.

Although Naxia has no ports for the reception of vessels of a certain size, its coasts, nevertheless, afford tolerably good places of shelter against contrary winds; and the small craft of the archipelago are continually passing into several of its coves. On the other hand, the principal town called

Naxia, and off which vessels may cast anchor in a roadstead, is at a very small distance from the much frequented harbours of the eastern side of the island of Paros, and in particular of the capital road of Nauffa. N. lat.  $37^{\circ} 6'$ . E. long.  $25^{\circ} 32'$ .

NAXIA, the capital of the above island, and one of the most beautiful towns in the Grecian archipelago. The town stands on an eminence by the sea-side, on the W. coast of the island, opposite to Paros. It was defended, under the Venetian princes, by a citadel, and by walls, which the Turks have in a great measure destroyed. The Latins, who were formerly masters of the country, are all lodged within their enclosure. The Greeks occupy that part which extends to the eastward of the castle, known by the name of the "New Town," Νέο-Κόριο. The ancient city extended to the north, towards the fountain which bears the name of Ariadne. There are also, below the castle, some remains of a subterranean aqueduct, that probably brought to the town the waters of a copious spring, which is seen four or five miles to the E., and which at this day serves to water part of the plain of Naxia. Bacchus had formerly a temple at Naxos. The gate and the foundation of it are still visible on a small rocky island, in the vicinity of Ariadne's fountain. A bridge built on a chain of rocks, it is said, joined this island to the large one, and conducted an aqueduct for conveying water for the priests who inhabited the enclosure of the temple. On the N. side of the island is found a colossal statue of Apollo, which is an imperfect piece of sculpture. The harbour, facing the island of Paros, was formerly capable of containing 30 galleys, was closed by a jetty, now to be distinctly perceived when the sea is smooth. It is at present several feet under water, and yet the small craft of the country lie safely there in all seasons. Ships of burden may anchor, in summer, off the harbour, under shelter of the rock, on which are the remains of the temple of Bacchus. N. lat.  $37^{\circ} 7'$ . E. long.  $25^{\circ} 26'$ . Sonnini. Olivier.

NAXOS, or NAXUS, in *Ancient Geography*, an ancient town of Sicily, on the east side of the island, on a small promontory to the south of "Apollinis Archageta ara," and to the east of "Veneris Fanum." It was near the mouth of the small river "Arifnes." Upon the destruction of this town, its inhabitants were removed to mount Taurus, on which they built the town of "Taurominium," called "Naxos-Taurominium."—Also, a town of the island of Crete.—Also, a town of Acarnania.

NAXUANA, a town of the Greater Armenia.

NAY, in *Geography*, a town of France, in the department of the Lower Pyrenées, and chief place of a canton, in the district of Pau; 9 miles S.E. of Pau. The place contains 2358, and the canton 10,036 inhabitants, on a territory of 145 kilometres, in 10 communes.—Also, a town of Africa, in the kingdom of Galam; 25 miles S. of Galam.

NAYE, or NAYEMOU, a town of Africa, in Bondou; 12 miles S.W. of Fatteconda.

NAYLAND, or NEYLAND, a market-town in the hundred of Babergh, and county of Suffolk, England, is situated in a valley on the north bank of the river Stour. This place was formerly remarkable for its woollen manufactures, but this branch of trade is now reduced to a very low ebb, only a small portion of yarn being made to supply the crape and bombazeen manufactories of Norwich. Some white and brown soap, of a very superior quality, is made here; as is also a considerable quantity of meal, which is sent to London. The church of Nayland, the principal ornament of the town, stands almost in its centre, and is surmounted by a lofty spire. The porch is a very handsome piece



piece of architecture, said to have been erected by one Abel, a clothier, whose monument appears in the wall. Various other monuments in memory of clothiers are dispersed throughout the interior of this edifice, but they are no otherwise worthy of regard, except as tokens of the early manufacturing opulence of the place. The market day is on Friday, and there is a fair annually on the second of October. According to the parliamentary returns of 1811, the houses in Nayland amounted to 184 in number, and the inhabitants to 933.

The manor here was one of those given by Henry III. to Hubert de Bango, his justiciary, when he created him earl of Kent. It afterwards came into the possession of sir Richard Weston, who, in Charles I.'s reign, was elevated to the dignity of lord Weston of Neyland, for his signal services as ambassador to several of the courts of Germany. This nobleman was subsequently made earl of Portland, and a knight of the Garter. Adjoining to Neyland is the parish called Stoke-Neyland, which is distinguished by a very noble church and steeple. This place was the site of a monastery of great note previous to the conquest, but it seems to have soon fallen to decay after that event. Gifford's-hall, the seat of the Monnocks, who have been proprietors of it since the time of Henry VI., is a conspicuous example of the fine old mansions. The shape of this house is quadrangular, with an open court in the middle, and the chief entrance under a tower gateway, said to have been built in the reign of Henry VIII. by Peter Gifford, esq. a distant relation of queen Anne Bullen. The whole is constructed of brick, and the mouldings of the doors and windows are of the same material. Opposite to the gateway are the remains of an old chapel. A print of the gateway may be seen in Britton's *Architectural Antiquities*, vol. ii. 4to. See also Kirby's *Suffolk Traveller*, 8vo. *Magna Britannia*; *Suffolk*.

NAYLER, JAMES, in *Biography*, an English quaker of the seventeenth century, who disgraced that harmless, and, in general, exemplary sect, by the extravagance and fanaticism of his conduct, was born at Ardsley, near Wakefield, in Yorkshire, about the year 1616. He received the elements of a very common education, and was residing at Wakefield when the civil wars broke out in 1641. He then entered into the parliamentary army, and served as a soldier in the ranks several years; at first under lord Fairfax, and afterwards as quarter-master in major-general Lambert's troop in Scotland, till he returned home, about the year 1649. At this period he was member of the Independent party, and continued so till the year 1651, when the preaching of George Fox, at Wakefield, made him a convert to the communion of Quakers, or, as they are more properly called, of *Friends*, among whom he soon commenced preacher, with much acceptability. In the beginning of 1652, he fancied he heard a voice calling upon him to renounce his kindred and father's house, and to go into the west of England, promising that God would be with him. He was obedient to what, in the fervour of enthusiasm, he believed was a heavenly monition, and went about preaching from place to place, making profelytes in abundance. In 1654-5, he came to the metropolis, where he found a meeting of Friends, which had been established by Edward Burrough, and Francis Howgill, among whom he greatly distinguished himself by his preaching, and so high did he rank in popularity, that he drew the people from the services of the other preachers, who were supposed to be less gifted in spiritual things. He became intoxicated by the notice taken of him, and going again into the west, he was, in 1656, committed to the prison of Exeter for propagating his opinions. Here, as is very natural, his friends shewed him

every mark of respect and attachment, and some zealots in his cause addressed him in terms that were fruitful to contemplate, calling him the "everlasting son of righteousness;"—"the prince of peace;"—"the only begotten son of God," &c. He received the homage with the composure of one who thought he deserved it; but Fox, and the other leading men among the Friends, disowned him, after they had attempted, in vain, to reclaim him to the rational principles of religion. When Nayler was released from imprisonment he intended to return to London, and taking Bristol in his way, his deluded adherents in Glastonbury, Wells, and other places, strewed their garments before him, and formed a procession, in imitation of our Saviour's entrance into Jerusalem, and in this way he made his entrance into Bristol. Such conduct was not likely to be overlooked by the existing government, and a committee was appointed by parliament to examine witnesses against Nayler, upon a charge of blasphemy, for admitting religious worship to be paid him, and for assuming the names and incommunicable titles and attributes of Christ. When charged in this way, he admitted the truth of the allegations, but contended, that the honours which he received were not paid to him, but to Christ, who dwelt in him. He was, however, found guilty, as it should seem, not legally, by a jury of his country, but, contrary to law, by a committee of parliament, who resolved that "James Nayler is guilty of horrid blasphemy, and that he is a grand impostor, and a great seducer of the people." To receive his sentence he was brought to the bar of the house; and as the punishment of this madman was as cruel as could well be inflicted by the malice of man, it is necessary to observe that the house was not unanimous in its decisions: it occupied the debates of the commons for more than a week: many of the members of that assembly were for putting him to death, and some few totally disapproved of the severity which was used against him. At length, on the seventeenth of December, it was carried by a majority, that "James Nayler be set in the pillory in the Palace-yard, Westminster, during the space of two hours, on Thursday next, and be whipt by the hangman through the streets, from Westminster to the Old Exchange, and there likewise be set on the pillory for two hours, on Saturday next, in each place wearing a paper containing an inscription of his crimes. And that at the Old Exchange his tongue be bored through with a hot iron, and that he be there stigmatized in the forehead with the letter B. That he be afterwards sent to Bristol, and be conveyed into and through the said city on horseback, with his face backwards, and there also to be publicly whipt; and that from thence he be committed to the prison in Bridewell, London, and there restrained from the society of all people, and there to labour hard till he be released by parliament; and during that time he be debarred the use of pen, ink, and paper; and shall have no relief, but what he earns by his daily labour." Such a sentence, which was executed without mercy, deservedly hands down to infamy all those who took a part in it: the parliament, who pronounced this sentence; the protector, who could have prevented it; and the *pious* divines, as they are sometimes called, Caryl, Manton, Nye, Griffith and Reynolds, who were sent to reclaim him, but who, when they were unable to effect their purpose, were the cruel abettors of his sufferings. Hereafter let no Christian look into the works of these men, nor think of their names, without connecting with them their brutal conduct towards a deluded madman, who was an object of pity, not of indignation, and who ought to have been assigned to the care of a physician for the cure of his phrensy, and not to the iron scourge of Cromwell's hangman.



man. After the Protector's death, Nayler was released from prison, and he took the earliest opportunity of going to Bristol, which had been the principal scene of his madness, and of making a confession of his offences, which he uttered with so much feeling, and real sorrow, as to draw tears from all who heard it. Nayler did not long survive his enlargement; he died as he was on his journey into Yorkshire, to receive there the welcome gratulations of his wife and children. When he was within two hours of his death, he exclaimed, in a spirit of piety which probably none of his persecutors ever felt, "there is a spirit which I feel, that delights to do no evil, nor to revenge any wrong, but delights to endure all things, in the hope to enjoy its own in the end. Its hope is to outlive all wrath and contention, and to weary out all exaltation and cruelty, or whatever is of a nature contrary to itself." After his death, his "Recantation" of those errors which had brought him into suffering, and his other pieces, were published in an octavo volume. Biog. Brit. Toulmin's Edit. of Neal's Hist. of Puritans, vol. iv. p. 152--7.

NAYO, in *Geography*, a small island in the East Indian sea, near the north coast of Celebes. N. lat.  $1^{\circ} 24'$ . E. long.  $124^{\circ} 24'$ .

NAYRES, or NAIRES. See CALICUT.

NAZRET, a town of Syria, in the pachalic of Aleppo; 6 miles E. of Aleppo.

NAZAGUNGE, a town of Bengal; 45 miles S.S.E. of Nattore.

NAZAREATE, or NAZARITESHIP, the state and condition of a Nazarite or Nazarean among the Jews. See NAZARITE.

The Nazareate was a state of separation from the rest of mankind; particularly in three things. 1. In that the person devoted to it drank no wine. 2. In that they did not shave their heads, but let the hair grow. 3. In avoiding the touch of dead people, which they held a defilement.

The Nazareate was of two kinds; the one temporary, or for a certain number of days; the other for life. The rabbins inquire what the term of the temporary Nazareate was, and determine it by the Cabbala; for since in Scripture, Numbers, vi. 5. where it is said *Domino sanctus erit*, the Hebrew verb *יקרי*, *erit*, consists of four letters; the first and third of which, taken as numeral letters, do each make 10, and the rest each 5, altogether 30: the term of the Nazareate, say they, was 30 days.

NAZARETH, in *Ancient Geography*, a town of Palestine, in the tribe of Zebulun, seated on the declivity of a mountain, at some distance W. from mount Tabor. Here our blessed Saviour spent the first thirty-three years of his life. Among the antiquities of Palestine, travellers mention a stately church, under ground, built, as it is reported, in the cave where the Virgin Mary received the Angel's hail, and where, just at the section of the cross, are erected two pillars of granite, each somewhat above two feet in diameter, and about three feet distant from each other. These are supposed to stand where the angel and the Virgin were stationed at the time of the annunciation. Near this are seen some noble remains of a much larger church, supposed, from its architecture, to have been built by the empress Helena, or about her time.

NAZARETH, in *Geography*, now called *Nasra*, formerly so much celebrated, is at present an inconsiderable village of Syria, in the pachalic of Saide, or of Acre, inhabited by one-third of Mahometans, and two-thirds Greek Catholics. The fathers of the Holy Land, who are dependent on the great convent of Jerusalem, have an hospitium and a church

here. They are usually the farmers of the country. In the time of Daher, they were obliged to make a present to every wife he married, and he took care to marry almost every week. Nazareth formerly held the third rank among metropolitan cities, dependent on the patriarch of Jerusalem. The Hebrews continued to inhabit it in the time of the Romans, until the reign of Constantine; and after that period, it passed alternately from the Christians to the Saracens. At present it is, as we have stated, a small village.

NAZARETH, a town of France, in the department of the Scheldt, and chief place of a canton, in the district of Gand. The place contains 4574, and the canton 12,742 inhabitants, on a territory of  $102\frac{1}{2}$  kilometres, in seven communes.

NAZARETH, a beautiful post-town of America, in Northampton county, Pennsylvania, inhabited by Moravians or United Brethren; 63 miles N. by W. of Philadelphia. It is situated on the central part of a tract of land, containing about 5000 acres, bought by the brethren, near a small creek, which loses itself in the ground, about one mile and a half east of the town; and consists of two principal streets that form a square. The principal building, called Nazareth-hall, contains a place of worship, and a school: and near this is another elegant edifice, inhabited by the single sisters. Another building is appropriated to the single brethren. The ordinary dwelling-houses are generally constructed of lime-stone, and inhabited by tradesmen and mechanics, chiefly of German extraction. The town is supplied with water by pipes from an excellent spring in its vicinity. The situation of the town, and the salubrity of the climate, render this an agreeable place. The number of inhabitants in the town and neighbourhood, constituting one congregation and meeting for religious worship at Nazareth-hall, was, in the year 1788, 450.

NAZARETH, a river of Africa, which runs into the Atlantic, near Cape Lopez Gonsalvo.

NAZARITE, or NAZARENE, in the *Old Testament*, is used for a person distinguished and separated from the rest, by something extraordinary, either his sanctity, dignity, or vows.

The word comes from the Hebrew *נָזִיר*, *nazir*, to distinguish, separate; in which it differs from Nazarean, an inhabitant of the country call *Nazarath*, which comes from *נָצַר*, *natzar*, or *netzer*, to save, preserve.

The first person to whom the title *נָזִיר*, *nazir*, is applied, is Joseph. (Gen. xlix. 26. See also Deut. xxxiii. 16.) He was so called, either because he was separated from the society of his brethren by their malice towards him, or from their evil practices by the grace of God, or because he was advanced by providence so highly above them in dignity and honour. But whatever was the reason of Joseph's being called *נָזִיר*, *nazir*, the term was afterwards used to denote a particular sort of separation or devotedness to God, and on that account was applied to the Nazarites. Accordingly these were of two sorts, viz. such as were by their parents devoted to God in their infancy, or even sometimes before they were born; and such as devoted themselves. The former are called "Nazaræi nativi," and were Nazarites for life; and the latter "Nazaræi votivi," who ordinarily bound themselves to observe the laws of the Nazarites only for a limited time. In the number of perpetual Nazarites, were Sampson, Samuel, and John the Baptist. (Judg. xiii. 5. 1 Sam. i. 11. Luke, i. 15.) These, or the "Nazaræi nativi," were not bound to the same strictness as the "votivi," who must not touch any dead carcase, nor so much as enter the doors of a house where a deceased person was. As for the "Nazaræi votivi," who bound themselves by a vow to observe



observe the law of the Nazarites for a certain time, their laws are contained in Numb. chap. vi. The institution of Naziritism was, without doubt, partly religious, and partly civil and prudential. That it was partly religious, is concluded from the book of Amos, chap. ii. 11. Moreover, the sobriety and temperance which the Nazarites were bound to observe very much conduced to health; and thus the institution had its civil and prudential use. (See Lam. iv. 7.) That the law of the Nazarites was observed among the Jews at the time of the evangelical history, is evident from what Josephus says of Bernice, A.D. 66. (De Bell. lib. ii. c. 15.) A difficulty has been raised with respect to St. Paul's vow at Cenchrea (Acts, xviii. 18.); because the Jewish writers say, that a Nazarite ought not to be out of the land of Israel; and in the law of Moses it is said (Numb. vi. 18.) "the Nazarite shall shave the head of his separation at the door of the tabernacle of the congregation." Dr. Lardner, in resolving this difficulty, inclines to think, that notwithstanding all the zeal of the Jews, they did at this time dispense with the exactness of many things required in the law of Moses. This seems to have been the necessary consequence of their living, as numbers of them now did, at a great distance from Jerusalem. Besides, it seems to have been a rule in the Jewish books, "that they who make the vow of the Nazarite out of the land of Israel, shall go into it to complete the vow." The learned writer now cited suggests, that it will much contribute to the solution of this difficulty, if it be allowed, that this was the reason of St. Paul's great concern to "keep the next feast at Jerusalem." See Acts, xviii. 9—22.

In the second sense of the term Nazarite, derived from נָזִיר, *nazir*, whence Nazareth, our Saviour himself was called a Nazarene, or Nazarite (Matt. ii. 23.); for this name, or title, as applied to Christ, is sometimes written *Ναζαρενός* (Mark, xiv. 67. xvi. 6. Luke, iv. 34), sometimes *Ναζαρενίου*, (Matt. xxvi. 71. John, xviii. 7, 8. Acts, ii. 22.) which words seem to be used by the Evangelists precisely in the same sense; accordingly, the Syriac version renders both by the word "Notzrio."

The evangelist Matthew's assigning as the reason for our Saviour's being called *Ναζαρενίου*, that he came and dwelt in the city of Nazareth (Matt. ii. 23.), and referring to some prophecy, which, at least in express words, is no where to be found in the whole Old Testament, hath given critics and commentators no little trouble; "that it might be fulfilled," saith he, "which was spoken by the prophets, he shall be called a Nazarene." Among the different solutions that have been given of this difficulty, the most probable are, either that the passage here referred to is lost, as Chrysostom suggests, or that the two first chapters of St. Matthew's gospel are not genuine (see MATTHEW), or, as St. Jerom intimates, that the evangelist does not here refer to any one particular passage, but to what several of the prophets have in effect said. As he uses the word prophets in the plural number, it is evident, said that father, that he did not take the words from the scripture, but the sense only. (See Whitby on Matt. ii. 23.) Being called a Nazarene is the same thing as being one, the Hebrews expressing word and thing by the same term. The meaning then of Christ's being called *Ναζαρενίου* may be, that he shall be despised and reproached, according to a variety of predictions (Pf. xxii. 6. lxi. 9. Is. liii. 3—5. Zech. xi. 12, 13.), which were accomplished, in one instance at least, by his being called a Nazarite, from his having dwelt at Nazareth, that being a town of such ill repute, that it was commonly thought no good thing could come out of it (John, i. 66.); and our Saviour's being supposed to come out of it being one occa-

sion of his being despised and rejected by the Jews. (John, vii. 52.) Nevertheless, the appellation *Ναζαρενίου*, of Nazareth, being added to Jesus, in order to distinguish him from all others of the same name, is sometimes applied to him when no reproach was intended, as by St. Peter (Acts, ii. 22. iii. 6. iv. 10.), and by an angel (Mark, xvi. 6.) It is, however, generally used by the Jews as a term of reproach, not only in respect to our Saviour himself, but to his disciples after his ascension. They styled them of the sect of the Nazarenes. (Acts, xxiv. 5.) Nevertheless, the disciples of Christ, after they had generally taken the name of Christians, retorted upon the Jews, giving this title of reproach (as some have supposed) to the judaizing Christians, as we learn from Epiphanius. See the next article.

NAZARITES, *Nazarenes*, or *Nazareans*, were likewise a kind of sectaries in the church, in the first ages of Christianity; or, as others describe them, the first believers in Christianity, profelyted from the Jews, and therefore called Jewish believers.

St. Epiphanius tells us, the Nazareans were the same with the Jews in every thing relating to the doctrine and ceremonies of the Old Testament; and only differed from them in this, that they added Christianity to those; professing to believe, that Jesus Christ was the Messiah.

There were two kinds of Nazareans; the one *pure*, who kept the law of Moses and Christianity together, and who were not placed by the ancient Christians in the register of heretics, but first ranked in this class by Epiphanius, in the fourth century; the other, real EBIONITES; see this article.

Ecclesiastical writers tell us, that St. Matthew preached the Gospel to the Jews at Jerusalem, and the rest of Palestine, in their own language; and that accordingly they had his Gospel written in the Hebrew of that time. And St. Epiphanius adds, that this Gospel was preserved entire among the Nazareans; only he doubts whether they might not have retrenched the genealogy of Jesus Christ, which was not in the copy of the Ebionites. St. Jerom, who translated it out of Hebrew into Greek and Latin, says, a great many people took the Hebrew Gospel, used by the Nazareans and Ebionites, to be the original of St. Matthew. See ST. MATTHEW.

Hence Baronius, in his Annals, says, if the Vulgate Latin version were to be reformed, it should rather be done by the Hebrew original, than by the Greek, which is but a copy. Casaubon treats this opinion of Baronius as highly impious; as not being able to conceive how the authority of the Greek version should depend on a text quite lost. He adds, that it was never used by any but the Nazareans, Ebionites, and some other heretics; and that it was full of fables, as having been altered and corrupted by those heretics.

The reader will find an accurate and satisfactory account of this Gospel in Mr. Jones's Method of settling the canonical Authority of the New Testament.

Mosheim observes, that the term Nazarenes was not originally the name of a sect, but that which distinguished the disciples of Jesus in general. Nevertheless, those who, after their separation from their brethren, retained the title of Nazarenes, differed much from the true disciples of Christ, to whom that name had been originally given. They held that Christ was born of a virgin, and was also in a certain manner united to the divine nature; they refused to abandon the ceremonies prescribed by the law of Moses, but were far from attempting to impose the observance of these ceremonies upon the Gentile Christians; they rejected also those additions that were made to the Mosaic institutions



tions by the Pharisees, and the doctors of the law; and from hence we see the reason why the greatest part of the Christians treated the Nazarenes with a more than ordinary degree of gentleness and forbearance.

This writer says, that after the destruction of Jerusalem, under the emperor Adrian, the zealots for the Jewish rites deserted the ordinary assemblies of Christians, and established separate meetings among themselves; and were then numbered with those sects which had departed from the pure doctrine of Christ. Hence, he says, arose the names of Nazarenes and Ebionites, by which the judaizing Christians were distinguished from those who looked upon the Mosaic worship and ceremonies as entirely abolished by the appearance of Christ upon earth. Hence he concludes, that though the Nazarenes and Ebionites are generally placed among the sects of the apostolic age, they really belong to the second century, which was the earliest period of their existence as a sect. At the beginning of Christianity, says Beaufobre, (Hilt. Manich. t. ii.) there arose two opposite errors concerning the person of our Saviour. The first obtained among the Christians who came out of Judaism. Many persuaded themselves that the Christ was but a mere man, distinguished from others by the abundance of divine gifts conferred upon him, and by his incomparable virtues. In the time of the apostles, according to Athanasius, the Jews were in this error, and drew the Gentiles into it; that the Christ is only a mere man, that he is not God, and that the Word was not made flesh. These Jews were not the unbelieving Jews, but such as made profession of Christianity. But though they agreed so far, they were not all of the same mind concerning the nativity of our Saviour. Some believed that he was the son of Joseph and Mary. Others acknowledged, that he was born of a virgin, and conceived by the sole operation of the Holy Spirit. Neither the one nor the other refused him the title of the Son of God; but they imagined that it was given him on account of the eminence of his office, the excellency of his gifts, his glorious resurrection, the sovereign authority and dominion to which he was advanced by the Father; to all which, they last added his miraculous nativity. These kept the name of Nazarenes, which had been given to the first believers; the others were called Ebionites. These two, says this author, were the most ancient heresies of Christianity. Origen and Eusebius speak of two sorts of Ebionites, including in these, as we may suppose, such as are sometimes called Nazarenes, and who were the descendants of the Jewish believers at Jerusalem. These latter believed Jesus to be born of a virgin by an especial interposition of the power of God, or by the Holy Ghost. They also received the apostle Paul and all the other apostles of Christ. Whilst, with the other class of Ebionites, they adhered to the injunctions of the law of Moses, after they had received the gospel of Christ, they did not, like them, impose legal observances upon all men as necessary to salvation. They were evidently of the same opinion with the believers in the church of Jerusalem. (See Acts, ch. xxi.) Whilst on their own part they observed them as descendants of Israel and Abraham, they did not impose the ordinances of the law upon others. Of these Nazarenes, Eusebius says, that though they believed Jesus to be born of a virgin by the Holy Ghost, they did not acknowledge his pre-existence as God the word; but Dr. Lardner presumes, that they believed Jesus Christ to be the word, and wisdom, and power of God; but they did not believe the pre-existence of the word as a distinct person and separate from God the father. St. Jerom says, that in his time there were many all over the East called Nazarenes, upon whom the Jews pronounced their curses as

heretics. For further particulars respecting these Nazarenes, see EBIONITES, GOSPEL, and St. MATTHEW.

NAZE, in *Geography*, a cape in the county of Essex, S of Harwich; near which has been erected a tower for a light-house, eighty feet high. N. lat.  $51^{\circ} 57'$ . E. long.  $1^{\circ} 14'$ .

NAZIANZES, in *Ancient Geography*, a town of Asia, in Cappadocia, towards the S.W., near mount Athan. It was the see of Gregory, the father of St Gregory, known to the world by his writings.

NAZIMOVA, in *Geography*, a town of Russia, in the government of Tobolsk, on the Enisei; 68 miles N. of Eniseisk.

NAZIN, a river of Russia, which runs into the Oby, N. lat.  $60^{\circ} 20'$ . E. long.  $68^{\circ} 20'$ .

NAZZARETO, a town of Persia, in the province of Irak; 130 miles S.S.W. of Hamadan.

NEA, a river of Norway, which runs into the Seelbo lake, in the province of Drontheim.

NEA, in *Ancient Geography*. See NEAPOLIS.—Also, a town of the Troade, according to Pliny, but placed by Steph. Byz. in Mysia.—Also, an island of the Ægean sea, placed by Pliny between Lemnos and the Hellespont, and consecrated to Minerva.

NEA Paphos, a town of the island of Cyprus, 60 stadia from Palæ Paphos, according to Strabo. It was situated in the S.W. part of the island, in a gulf formed by the promontory of Zephyrium.

NE ADMITTAS, in *Law*, a writ directed to the bishop, in behalf of the plaintiff, or defendant, in a cause where a quare impedit, or assize of darrein presentment, is depending; when either party fears, that the bishop will admit the other's clerk during the suit between them.

This writ should be brought within six months after the church becomes void, before the bishop may present by lapse; and upon granting it, another writ is issued to the chief justice of the common pleas, to certify the king in chancery, whether there be any plea before him and the other justices, between the parties, &c.

NEAGH, LOUGH, in *Geography*, a lake of Ireland of considerable extent, lying between the counties of Armagh, Tyrone, Londonderry, and Antrim. According to Dr. Beaufort, it is 15 miles long, seven broad, and covers 58,200 Irish acres, equal to 93,502 English ones. It was formerly stated to cover a plain of 100,000 acres, but Mr. Lendrick's Survey corrected this error. The river called the Lower Bann, flowing from south to north, is the only outlet for seven rivers and innumerable streams that pour their tributary waters into this great inland sea, yet inundations seldom occur; "perhaps a great overflow," says sir Charles Coote, "will not occur above once in fifteen years." There are, however, tracts of very low marshy ground, especially on the south of it, which are usually flooded, and are considered incapable of being reclaimed. Lough Neagh is the largest of the Irish lakes; but much inferior to many of them in point of beauty. Its shores are mostly formed either by the marshy grounds already mentioned, or by an inanimate strand. They are of course deficient in those varied banks and bold promontories, without which such extensive sheets of water cannot have a picturesque effect, unless when the uniformity is broken by frequent islands of different size and character. There are but two in this lake, a very small one near the mouth of the Blackwater, and Ram island, within a short distance of the Antrim shore, remarkable only for an ancient round tower. The views are more pleasing in lough Beg, into which these waters again expand, after the course of about a mile through  
a very



a very contracted channel. (See *Lough BEG.*) The waters of lough Neagh have been celebrated for different qualities. Some have attributed to them a healing quality, and represented them as useful in scrophulous disorders. Barton enlarges on this property, and Sir Charles Coote, in his Statistical Survey of Armagh, says it has been *indubitably proved*. Sir Charles mentions a bay on the Armagh side of the lough, where this virtue is said to exist principally, and in Molyneaux's appendix to Boate's Natural History of Ireland is a letter from Francis Neville, esq. to the bishop of Clogher, relating a remarkable cure of the king's evil, in this place, in eight days. The benefits, however, have been attributed by many to the *cold bathing*, and not to any particular property of this water. The petrifying quality of this lough was long disputed, and even ridiculed; but it has been now established beyond a doubt, that such a quality does exist, either in the waters of the lake, or, what is more probable, in the soil of the adjacent shores on the Antrim side. Large pieces of wood are found, some entirely in a petrified state, and others partly so. Near the shores of lough Neagh are also strata of what is called *black wood* or *wood coal*, two of them 25 feet thick and 80 yards deep. On the strand of lough Neagh are found some transparent pebbles, which take a beautiful polish, and are little inferior to cornelian, which they resemble. These are called gems and lough Neagh pebbles, and are sold to lapidaries in Dublin. The lake abounds with salmon, pike, trout, eels, and other kinds of fish. The lough Neagh whiting, which is also found in other Irish lakes, is now supposed to be the *charr* of Pennant. Coote's Armagh Survey. Beaufort's Memoir. Barton, &c.

NEAL, DANIEL, in *Biography*, a learned English Protestant dissenting divine, who flourished in the eighteenth century, was born in London in the year 1678. Having lost his parents when very young, the care of his education devolved on his maternal uncle, who sent him to Merchant Taylors' school to be instructed in grammar and classical learning. On this public foundation he continued till he became the head scholar, but, from an unwillingness to subscribe to the articles, he declined an offer made him of an exhibition to St. John's college, Oxford. About the year 1696 he entered himself as student in a dissenting academy under the direction of Mr. Rowe, an eminent tutor. After spending three years in this seminary he went for farther improvement to Holland, where he prosecuted his studies during two years at the university of Utrecht, under the celebrated professors d'Uries, Grævius, and Burmann, and then he removed to Leipsic, where he remained another year. In 1703 he returned to his native country, in company with Mr. Martin Tomkins, and Mr., afterwards Dr., Nathaniel Lardner, and soon began to officiate as a preacher. In 1704 he was chosen assistant to Dr. Singleton, minister of an independent congregation in Aldergate street, upon whose death, in 1706, he was elected to the pastoral office among them. In this connection he continued thirty-six years, discharging the duties of his office with the greatest assiduity and zeal. The small portion of time which he allowed himself from his official services, as a preacher and pastor, he devoted to the study of history, and in 1720 he published his first work under the title of "The History of New England, being an impartial Account of the civil and ecclesiastical Affairs of the Country, &c." This work, which consisted of two volumes octavo, contains an entertaining and instructive narrative of the first planting of the gospel in a foreign heathen land, and of the rise of an infant commonwealth, struggling with a thousand difficulties, but triumphing over them all, together with biographical me-

moirs of the principal persons in church and state. In 1722 Mr. Neal published "A Letter to Dr. Francis Hare, Dean of Worcester, occasioned by his Reflections on the Dissenters, &c." and in the same year he gave the public "A Narrative of the Method and Success of inoculating the Small-pox in New England, by Mr. Benjamin Colman, &c." On the appearance of this piece her royal highness Caroline, princess of Wales, sent for Mr. Neal to obtain from him some farther account of the actual practice of inoculation. From this period he published only some single sermons till the year 1732, when he sent into the world the first volume of his great work, "The History of the Puritans, or Protestant Non-conformists, from the Reformation to the Death of Queen Elizabeth, with an Account of their Principles, &c." The circumstances that gave rise to this publication were as follow: Some years before, Dr. Edmund Calamy, in his "Abridgment of the Life of Baxter," had laid before the public a view of the state of non-conformity, and of the characters and sufferings of its principal adherents during the period immediately succeeding the Act of Uniformity in 1662. This work suggested to Dr. John Evans the design of writing "A History of Non-conformity," from the reformation to the commencement of the civil wars in England in 1640. Mr. Neal was requested to take up the history from that period, and to carry it on to the Act of Uniformity. Dr. Evans had not by any means accomplished his work at the time of his death in 1730, but before this Mr. Neal had finished his intended labour, and had rendered his MS., in every respect, ready for the press. The decease of Dr. Evans obliged him to take up the history from the reformation to the year 1640, in order to render his own work complete and more generally interesting. Mr. Neal had not long published his first volume when he saw he had abundant encouragement to proceed with the undertaking, and in the year 1733 he published a second volume. It was not till the year 1736 that he gave the public his third volume, but during the interval, he engaged with other ministers in certain lectures preached in London, justifying and recommending the principal topics of the Christian religion; and exposing the erroneous tenets of the church of Rome. In 1738 Mr. Neal published his fourth volume, which brought down the history of non-conformity to the Act of Toleration in 1689. By this work he has secured to himself a permanent and unfading reputation: it is thus described by Dr. Jennings. "The style is most easy and perspicuous; and the judicious remarks which he leads his readers to make upon facts as they go along, make his history to be not only more entertaining, but to be more instructive and useful than most books of that kind." In a controversy which he had with Dr. Maddox, Mr. Neal published "A Review of the principal Facts objected to in the first Volume of the History of the Puritans," which was considered to be written with great judgment, and to establish the author's character as an accurate and diligent historian. His health now began to decline, or he would, probably, have vindicated the other volumes from the animadversions of Dr. Zachary Grey. This task has been very judiciously performed by Dr. Toulmin, in notes to a new edition of Mr. Neal's History. Mr. Neal, after a long series of illness, died at Bath in 1743. "He had," says his biographer, "filled the relations of domestic life with integrity and honour, and his loss occasioned a deep regret in the hearts of his family. In his public connections, he was a prudent counsellor, and a faithful steady friend." He was probably a Calvinist in his religious faith, but neither his charity nor his friendships were confined to men of his own opinions. The Bible alone was his standard for religious



truth, and he was willing and desirous that others should have the same liberty of judging of its contents as he claimed for himself. He had married a sister of the celebrated Lardner, by whom he left a son and two daughters. His son, Mr. Nathaniel Neal, an eminent attorney, was author of "A free and serious Remonstrance to Protestant Dissenting Ministers on occasion of the Decay of Religion;" which was republished by Mr. Job Orton in the year 1775. One of the daughters married the son of Dr. David Jennings, and the other the Rev. Mr. Lister, of Ware, in Hertfordshire, whose sons are the eminent Dr. William Lister, of London, and Mr. Daniel Lister, to whom Dr. Toulmin has dedicated his edition of "The History of the Puritans," to which we refer our readers for more information on the subject of this article.

NEALED, at *Sea*, is used when the sounding is deep water close to the shore: it is then said to be *nealed to*; as also when the shore is sandy, clayey, oozy, or foul and rocky.

NEALING, or ANNEALING, in the arts, consists in making metals red-hot, which have become hard and brittle by working, in order to restore their former malleability and tractability. All metals have the property of becoming more or less hard and unmalleable, after undergoing the operation of the hammer. Metals thus affected are more elastic than they were before, but, at the same time, they become more brittle. They are the more sensibly affected in this manner in proportion as the metals are naturally harder. Copper is so much affected, and even gold and silver, by hammering and compression, that they soon cease to be malleable, and instead of being extended under the hammer they crack and split. Hence the necessity of annealing the common coins of the country, to which we have referred under the article MINT. In all cases the labour of hammering, when it is to be long continued, must occasionally be interrupted to soften and restore malleability to metals; this is effected by making them red-hot, and suffering them to cool gradually. Thus heat produces the same effect on metals, in the state described, as it does upon tempered steel, for, if the hardest tempered steel be made red-hot and cooled slowly, it becomes as tractable and ductile as the softest iron. Articles of glass are also nealed before they are fit for use, by placing them in a furnace, and after they have been raised to a due degree of temperature, they are suffered to cool gradually. Without this operation glass vessels would be entirely useless, as they would not admit of the least change of temperature from cold to heat, nor would they bear the slightest blow. See GLASS.

NEALING of *Glass* is the baking of glass, to dry, harden, and give it the due consistence, after it has been blown, and fashioned into the proper works.

This is usually performed in a kind of tower, called the *leer*, built over the melting furnace. See GLASS.

NEALING of *Glass* is also used for the art of staining of glass with metalline colours.

One fine use of silver, says Mr. Boyle, was only discovered since the art of annealing upon glass came to be practised. For prepared silver, or even the crude metal, being burnt on a glass plate, will tinge it of a fine yellow, or golden colour. And there are several mineral earths, and other coarse matters, of use in this art, which by means of fire impart transparent colours to glass, and sometimes very different ones from those of the bodies themselves.

NEALING of *Steel*, is the heating it in the fire to a bloody-red heat; and then taking it out, and letting it cool gently of itself.

This is done to make it softer, in order to engrave or

punch upon it. See TEMPERING, and ENGRAVING. See also STEEL.

NEALING is also used for the art or act of burning or baking earthen or other ware in an oven.

The miners at Mendip, when they meet with a rock they cannot cut through, anneal it, by laying on wood and coal, and contriving the fire so that they quit the mine before the operation begins, it being dangerous to enter it again before it be quite cleared of the smoke. Phil. Trans. N<sup>o</sup> 39. p. 769.

NEALING of *Tile* is used in ancient statutes for the burning of tile.

The word is formed of the Saxon *onelan*, *accendere*, to light, burn.

NEANDER, MICHAEL, in *Biography*, a German physician, who was more celebrated, however, for his mathematical knowledge, was born in the year 1529, at Joachimsthal, a town of Misnia, on the borders of Bohemia. After the usual studies, he received the degree of master of arts at the university of Wittemberg, in 1550. He afterwards settled at Jena, as a teacher of Greek and mathematics, and fulfilled these duties for the space of seven years, during which he also applied himself to the study of medicine: and in 1558 he was admitted to the degree of M.D. Two years after this he was appointed professor of medicine in the same university, of which he also twice filled the office of rector. He died in 1581, at the age of fifty-two, leaving behind him several learned publications. The titles of these are, "Synopsis Mensurarum et Ponderum, &c." 4to., Basle, 1555; "Methodorum in omni genere Artium brevis et succincta *υληγησις*," 1556; "Physice, seu Sylloge Physica Rerum Eruditarum ad omnem Vitam utilium, Partibus Duabus ex prælectionibus Michaelis Neandri," 1585 and 1591; "Spherica Elementa, cum Computo Ecclesiastico, &c." Gen. Biog.

NEANDRIA, or NEANDRIUM, in *Ancient Geography*, a town of the Troade, upon the Hellespont, according to Strabo. The inhabitants of this town were transferred to Alexandria.

NEAP, or NEEP-Tides, are those tides which happen when the moon is in the middle of the second and fourth quarters.

The neap-tides are low tides, in respect to their opposites, the spring-tides. As the highest of the spring tides is three days after the full or change, so the lowest of the neap is four days before the full or change. On which occasion the seamen say, that it is *deep neap*. See TIDE.

NEAPED, when a ship wants water, so that she cannot get out of the harbour, off the ground, or out of the dock; the seamen say, *she is neaped*, or *beneaped*.

NEAPOLIS, in *Ancient Geography*, Naples, a town of Italy, in Campania, upon a gulf to which it has given its name. This town was built by the Cumæans, who called it *Νεαπολις Κυμαίων*, or the new Cumæ. This city became municipal, and obtained the privilege of a borough by the Julian law. Strabo says, that in his time many Romans resorted hither to pass a voluptuous life after the manner of the Greeks, whose language they adopted. Alaric, after having sacked Rome, A.D. 409, passed before Naples without damaging it, and the same conduct was pursued by Genseric. Hither the young Augustulus retired, when he was dethroned by Odoacer. The town was taken by this prince, and afterwards by Theodoric, who gave it the name of a comté. See NAPLES.—Also, a town mentioned in the Acts of the Apostles, (chap. xvi. v. 11.) This was a town of Macedonia, where St. Paul arrived from the island of Samothrace.—Also, a town in the interior of the Tauric

Cheriso-



Cherfonefus, according to Strabo; but its situation is not afcertained.—Alfo, a town of Caria, placed by Ptolemy between Nariandus and Caryanda.—Alfo, a town of Afia Minor, in Ionia, according to Strabo. It was fituated N.E. of the ifle of Samos, N. of mount Mycale, and S.S.E. of Ephesus. This town belonged to the Samians, who had received it in exchange of the inhabitants of Ephesus.—Alfo, a town of Afia, in Ifauria, according to Suidas, probably the fame which Ptolemy places in Pifidia.—Alfo, a town of Egypt, in the Thebaid, called alfo *Nea*, and placed by Herodotus in the vicinity of Chemnis.—Alfo, a town of Africa, now *Nabal*, fituated five leagues S.W. of Curobis. It was near the fea-coaft, and feems to have been a confiderable place.—Alfo, a name given to one of the ports of Alexandria.—Alfo, a town on the weftern coaft of the ifland of Sardinia.—Alfo, a town of the Colchide, placed by Ptolemy between Siganeum and Acapolis.—Alfo, a town of Cyrenaica, placed by Ptolemy between Charecla and Artamis.

NEAPOLITAN DISEASE, a name given by many authors to the venereal difeafe (fee *LUES Venerea*); and from hence came the name of the Neapolitan ointment, which is a mixture of quickfilver, and other things, into an ointment intended as a cure for it.

NEAR, or *No NEAR*, at *Sea*, a word of command from him that conds the fhip, to the man at the helm, requiring him to let her fall to leeward. See *No nearer*.

NEARCHUS, in *Biography*, one of Alexander's captains, was employed by that conqueror in conducting his fleet of India, by the ocean to the Perfian gulf. This expedition proved fo tedious and fatiguing, that the leader, on his return, was not recognized by his friends until he had made himfelf known. His fervice was fo much efteemed, that he was crowned with a garland by Alexander at Sufa, and wherever he went through the camp flowers were thrown upon him. He is reckoned among the hiftorians of Alexander, and is referred to as fuch by Strabo, Suidas, and Arrian, the latter of whom has copied much from him in his *Indica*. The relation of his voyage is extant, and is a very curious and valuable piece. It is published among Hudfon's "Geographi Minores." Gen. Biog.

NEARDA, NEHARDA, or *Naarda*, in *Ancient Geography*, a town of Afia, on the right bank of the Euphrates, S.E. of Anatho. This, according to Jofephus, was one of the moft celebrated of the Jewifh fchools.

NEAT, or *NET-weight*, the weight of a commodity alone, clear of the cask, bag, cafe, and even filth. See *NET*, and *WEIGHT*.

NEAT-Cattle, in *Agriculture*, a term applied to all forts of cattle of the cow kind.

NEATH, in *Geography*, in the hundred of Neath, and county of Glamorgan, South Wales, is a market town, feated in a valley on the eaftern bank of a river which gave name to the place, and which is navigable for fmall veffels. Here was formerly a Roman ftation, called Nidum. In the reign of king Henry I. a caftle was built here by Richard de Granavilla, or Granville, who was lord of Neath, and who is faid to have come to this part of the country to co-operate with Robert Fitzhammon and others againft Rhys-ap-Tudor. Having fubdued this prince, Richard de Granville feems to have fettled here; and from him have fprung the prefent noble family of Granville.

Neath is a borough by prefcription. The corporation confifts of a portreeve, twelve aldermen, a recorder, and an indefinite number of burgefles. The portreeve, and the conftable of the caftle, hold a court of pleas once every month,

and a court leet twice a year. Here are likewise held the petty felfions for the hundred, and there is a court of quarter felfions once in twelve months. This is one of the contributory boroughs with Cardiff, which fend one member to parliament. The market days are Wednesday and Thursday in each week. A legacy has been lately left for the endowment of a free fchool, but it is not yet eftablifhed. This parifh, according to the parliamentary returns of 1811, contained 583 houfes, and 2740 inhabitants.

No manufactures of any confequence are carried on within the limits of the borough of Neath, but its vicinity is crowded with iron works, fome of which are conducted upon a very extenfive fcale. Here are likewise feveral copper works, a large chemical work, and a very productive colliery. The produce of thefe feveral eftablifhments is conveyed to Neath and Swanfea by means of canals, and from thence fhipped to different parts of the kingdom. Much of the copper from Paris mountain in Anglefey is fmelted in this neighbourhood; where, enveloped in the cloud of fmoke which iffues from the numerous furnaces, ftand the ruins of Neath abbey, built by Richard de Granville, in the reign of Henry I. It was dedicated to the Holy Trinity, and filled with monks of the order of St. Savigny, in France. In this monastery the unfortunate Edward II. fheltered himfelf, when driven back from Ireland by contrary winds, till he was taken by one of his barons, and confined in the caftle of Kenilworth. The remains yet ftanding are very confiderable, and form the north fide of a quadrangle. In front of the gates are the arms of England, and of John of Gaunt. At a fhort diftance north from Neath, on the fummit of a hill, is the *Knoll*, a curious cafellated feat of the Mackworths. The views from this manfion are peculiarly fine, and the pleafure grounds around are laid out in perfect conformity to the nature of the country in which it is fituated. Adjoining to thefe on the north, at a hamlet called Cwyn-y-Brynn, is a valt ftone of feventy tons weight, which is denominated Arthur's-ftone, but how it became to be fo designated is uncertain. At Llychwir, eight miles diftant from Neath, are the remains of a ftrong caftle destroyed by Rhys-ap-Gryffydd, in the year 1215; and about half way on the road to Bridgend is Margam-park, celebrated for its orangery. Here are alfo fome ruins of an ancient abbey founded by Robert, earl of Gloucefter, in the year 1147. This abbey, according to the accounts of thofe who vifited it in the laft century, muft have been, in the time of its profperity, a very large and magnificent building, and we cannot help deploring the want of tafte, not to fay the worfe of it, that could destroy this ancient fabric for the fake of ufing its materials in the conftruction of "the newly erected manfion of Penrice." In the village of Margam ftands a very curious ancient crofs, and in the adjoining field are feveral infcribed and monumental ftones. The following is one of the infcriptions, "Senatus populufque veromanus divo Tito, divi Vefpafiani, F. Vefpafiano Augufto." On the north-weft fide of a hill, on the left of the village, is a Roman encampment of great extent, and contiguous to this feveral fmall entrenchments. The fummit of the hill is diftinguifhed by a fingle ftone monument called Y-Maen-Llythyrog, and fuppofed to be one of the remotefteft relics of antiquity in Great Britain. It is a mafive parallelopiped, fourteen feet in height, and bears an infcription which has been differently read. Near it is an "ager," or heap of ftones, fuppofed to cover the grave of fome ancient chief. Cambrian Traveller's Guide, 8vo. Carlifle's Topographical Dictionary of Wales, 4to. Malkin's Scenery, Antiquities, &c. of South Wales, 2 vols. 8vo. 1807.



NEATIMERI, a town of Hindoostan, in Travancore; 15 miles E. of Anjenga.

NEB, a river of the Isle of Man, which runs into the sea at Peel town.

NEB, or *Nebo*, in *Ancient Geography*, a town of Palestine, in the tribe of Benjamin.

NEBBIO, or NEBIO, in *Geography*, a town of the island of Corfica, and the see of a bishop, in ruins; nine miles S.W. of Bastia.

NEBDANSKOI, a town of Russia, in the province of Usting, on the Sola; 24 miles S. of Ust Sisolsk.

NEBEL, or NEVEL, in the *Jewish Antiquities*, a kind of musical instrument. See NABLUM.

NEBERYBIS, in *Geography*, a town of Poland, in the palatinate of Kiev; 60 miles S. of Bialacerkiew.

NEBIO, a town of European Turkey, in the Morca; 20 miles W. of Misitra.

NEBITAU, a town of Bohemia, in the circle of Pilsen; 22 miles W.N.W. of Pilsen.

NEBO, or NABO, in *Ancient Geography*, a mountain situated N. of the torrent of Arnon, between the country of the Amorites, and that of the Moabites. The Israelites, in the 40th year of their Exodus, encamped at the foot of this mountain; and Moses, having executed the commission with which he was entrusted, and having pronounced his blessing on the 12 tribes assembled to receive his last charge, ascended this mountain, from the summit of which, called Pisgah, he had a view of the promised land, into which he was not permitted to enter. On this mountain he soon afterwards died. Nebo forms a part of the chain of mountains called Abarim.

NEBOUSAN, in *Geography*, a province of France before the revolution, of which St. Gaudens was the capital; now the department of the Upper Garonne.

NEBRA, a town of Saxony, in Thuringia; 12 miles N.W. of Naumburg. N. lat.  $51^{\circ} 18'$ . E. long.  $11^{\circ} 45'$ .

NEBRISSA, in *Ancient Geography*, *Librixa*, a town of Spain, in Bætica, towards the north in ascending the river Bætis.

NEBRITES, in *Natural History*, a name given by the ancients to a stone held sacred to Bacchus. It was of the brownish-yellow colour of the skin of the young fawn, with some variegations, and was semi-pellucid; it seems to have been the same with some of our agates, with a yellow ground; the ancients, however, do not appear to have been very determinate in the accounts of it; for Pliny mentions another kind of it, which was black.

NEBRUS, a name given by the ancients to the *hinnuleus*, a deer of one year old. In the next year it is called *pattalia*; in the third, *dierota*; and in the fourth, *cladii*; the word *ceraste* was used as the name of this animal when of a greater age than this.

NEBSTICH, in *Geography*, a town of Moravia; nine miles N.E. of Brunn.

NEBULA, derived from νεφελή, a cloud, signifies, in *Surgery*, a slight opacity of the cornea of the eye.

NEBULÆ, in *Astronomy*, a term applied to those fixed stars, which exhibit a dim, hazy light, being less than those of the sixth magnitude; and, therefore, scarcely, or not at all visible to the naked eye, to which, if seen at all, they appear like dusky specks or clouds through telescopes: these nebulous stars plainly appear to be congeries or clusters of several small or distant stars. By the skill and assiduity of Dr. Herschel, and by means of those instruments of great space-penetrating power which he has employed, our knowledge of these nebulae has been very much extended. Of his account of their nature and formation, and of their different variety,

we have already given a somewhat detailed account, under the articles *DOUBLE Stars*, *GALAXY*, and *HEAVENS*. It was our intention to have enlarged under this head, and to have transcribed the catalogue of Nebulae, with which he has furnished the astronomer; but finding that we should thus exceed our prescribed limits, we must content ourselves with referring for further particulars to his own account, in the Philosophical Transactions for 1800, 1802, and 1804, as well as to the article *STARS*, besides those articles that are above cited. We shall here, however, subjoin the following observations in reference to this subject. Nebulae, which on account of their great distance can be seen only by instruments such as we have above described, may probably be all resolved, says Dr. Herschel, into clustering stars, such as are profusely scattered over the galaxy, groups of stars or collections of closely, and almost equally compressed stars, of any figure or outline, and clusters of stars which differ from those last mentioned, in their beautiful and artificial arrangement. Clustering collections of stars may easily be supposed sufficiently removed to present us with the appearance of a nebula of any shape, which, like the real object of which it is a miniature, will seem to be gradually brighter in the middle. Groups of stars also may, by distance, assume the semblance of nebulous patches; and real clusters of stars, for the same reason, when this composition is beyond the reach of our most powerful instruments to resolve them, will appear like round nebulae that are gradually much brighter in the middle. With instruments of high space-penetrating powers, such as Herschel's 40-feet telescope, nebulae are the objects that may be perceived at the greatest distance. Clustering collections of stars may easily contain 50,000 of them. See *HEAVENS*.

NEBULOSA LINEA, in *Heraldry*. See *LINE* and *NEBULY*.

NEBULOSITY, MILKY, a phenomenon of a very interesting nature, noticed by Dr. Herschel. (See *HEAVENS*.) This, he says, is probably of two different kinds, one deceptive, or such as arises from widely extended regions of closely connected clustering stars, contiguous to each other, like the collections that construct our milky way; and the other, on the contrary, real, and possibly at no great distance from us. "The changes (says Dr. Herschel,) I have observed in the great milky nebulousity of Orion, 23 years ago, and which have also been noticed by other astronomers, cannot permit us to look upon this phenomenon as arising from immensely distant regions of fixed stars. Even Huygens, the discoverer of it, was already of opinion, that in viewing it, we saw, as it were, through an opening into a region of light. (*Systema Saturnium*, p. 8, 9.) Much more would he be convinced now, when changes in its shape and lustre have been seen, that its light is not, like that of the milky way, composed of stars. To attempt even at a guess at what this light may be would be presumptuous. If it should be surmised, for instance, that this nebulousity is of the nature of the zodiacal light, we should then be obliged to admit the existence of an effect without its cause. An idea of its phosphorical condition is not more philosophical, unless we could shew from what source of phosphorical matter such immeasurable tracts of luminous phenomena could draw their existence, and permanency; for though minute changes have been observed, yet a general resemblance, allowing for the difference of telescopes, is still to be perceived in the great nebulousity of Orion, ever since the time of its first discovery." The nature of nebulous stars is, according to Dr. Herschel, involved in much obscurity. That stars should have visible atmospheres of great extent is surely surprising, unless we attribute to such atmospheres the



the quality of self-luminous milky nebulosity. Of the starry nature of the central point we can have no doubt; for its appearance does not differ in any respect from that of a star of an equal magnitude; but when the great distance of such stars is taken into consideration, the real extent of the surrounding nebulosity is truly wonderful. The planetary nebulæ (see HEAVENS) seem to be allied, in Dr. Herschel's opinion, to nebulous stars; and the planetary nebulæ with centres seem to be of the same kind.

NEBULY, NEBULÉE, in *Heraldry*, when a coat is charged with several little figures, in form of clouds, running within one another; or when the outline of a bordure, ordinary, &c. is indented or waved. See LINE, in *Heraldry*.

NEBUSCHEL, in *Geography*, a town of Bohemia, in the circle of Boleslau; six miles N.E. of Melnik.

NECAU, a town of Africa, in the country of Biledulgerid; 150 miles S.E. of Beni-Mezzah.

NECAUS, a town of Africa, in Algiers; 100 miles S.W. of Constantinople.

NECESSARIANS denote those, who are advocates for the doctrine of philosophical necessity.

NECESSARIO, in the *Italian Music*. The word is prefixed to certain parts in music, as *a doi violini necessario*, *i. e.* that must be played by two violins; *canto necessario* is used to signify much the same as *concertante*.

Every mode has certain chords, which may be called its necessary, or essential chords.

NECESSARY, in a philosophical sense, that which cannot but be, or cannot be otherwise.

The schoolmen make a great many kinds or divisions hereof: as, *necessary in causing*: when there is a cause from which an effect must necessarily follow: *necessary in predicating*; *necessary in being*, &c.

There is also a *logical* necessary; *physical* necessary; and there are *metaphysical* and *moral* necessities: all which it is sufficient to mention.

NECESSITY, what is produced by a necessary cause, or a power that is irresistible.

In this sense *necessity* stands opposed to *liberty*.

Necessity is usually confounded with constraint; yet, in effect, necessity, according to Rochefoucault, differs from constraint in this, that the former is joined with the pleasure and inclination of the will, to which constraint is contrary.

Simplicius, after Plato and Epictetus, distinguishes two kinds of necessity; the one *violent* or *coactive*, which is opposite to liberty; the other *spontaneous* or *voluntary*, very consistent with it: this latter, adds he, is that, which necessitates all things consistent with their nature, as being connatural to them; since *αὐτοκίνητος*, a thing that is self-moved, must of necessity be moved according to its own nature, *i. e.* spontaneously. This distinction is admitted by many of the divines, particularly by St. Augustine, who urges it against the Pelagians, as is shewn by Jansenius.

The schools distinguish a *physical* necessity, and a *moral* necessity; and a *simple absolute* necessity, and a *relative* one.

NECESSITY, *Physical*, is the want of a principle, or of a natural means necessary to act; which is otherwise called a *physical* or *natural* impotence.

NECESSITY, *Moral*, is only a great difficulty; such as that arising from a long habit, a strong inclination, or violent passion.

NECESSITY, *Simple*, or *Absolute*, is that which has no dependence on any state or conjuncture, or any particular situation of things, but is found every where, and in all the circumstances in which the agent can be supposed.

Such is, in a blind man, the necessity he is under of not distinguishing colours.

NECESSITY, *Relative*, is that which places a man in a real incapacity of acting or not acting in those circumstances, and that situation he is found in; though in other circumstances, and another state of things, he might act, or not act.

Such, in the opinion of the Janfenists, is the necessity of doing evil in a man, who, with a violent passion, has only a feeble grace to resist it; or the necessity of doing well in a man, who, having grace of seven or eight degrees of strength, has only concupiscence of two or three degrees to withstand.

All these kinds of necessity are opposite to liberty; since, even in the last, it is as impossible for a man to act, or not act, as if he were in a state of *absolute*, *simple*, and *physical* necessity.

The schoolmen admit other species of necessity; *antecedent*, *concomitant*, *consequent*, &c.: *antecedent*, is that arising from an antecedent cause, necessarily operating; such is the necessity of the sun's rising to-morrow morning: *concomitant* arises from an antecedent and necessary cause, but depends on the circumstances of the effect; the effect all the while being free. Thus it is necessary Peter sit, supposing he is sitting.

NECESSITY, *Metaphysical* or *Philosophical*, is a term that has been much used by modern writers; and which some have defined to be, that by which a thing cannot but be, or whereby it cannot be otherwise. But a much approved author on this subject objects against this definition, and observes, that *philosophical* necessity is really nothing else, than the full and fixed connection between the things signified by the subject and predicate of a proposition, which affirms something to be true; so that it is in no respect different from their certainty. When there is such a connection, then the thing affirmed in the proposition is necessary in a philosophical sense; whether any opposition or contrary effort be supposed or supposable in the case, or not. When the subject and predicate of the proposition, which affirms the existence of any thing, either substance, quality, act, or circumstance, have a full and certain connection, then the existence of that thing is said to be necessary in a metaphysical sense.

Those that are commonly called Necessarians, allow no other liberty to man, that is not restrained by this kind of necessity: and when they consider intelligent beings as the subjects of it, some of them distinguish it into *moral* and *natural* necessity. *Moral* necessity is used in a variety of senses: sometimes for a necessity of moral obligation; and often for great obligation in point of interest: sometimes, by *moral* necessity is meant that apparent connection of things, which is the ground of moral evidence; and so it is distinguished from *absolute* necessity, or that sure connection of things, that is a foundation for infallible certainty: and sometimes, by *moral* necessity is meant that necessity of connection and consequence, which arises from such moral causes as the strength of inclination or motives, and the connection, subsisting in many cases, between these and certain volitions and actions. By *natural* necessity, as applied to men, they understand such necessity as men are under, through the force of natural causes; in contradistinction to those that are called moral causes, such as habits and dispositions of the heart, and moral inducements and motives.

The advocates for the doctrine of necessity maintain, that the will is never determined without a motive, and that motives always influence the will in a definite and invariable



variable manner, so that it is impossible to choose the action A, and its contrary *a*; the motives or previous circumstances remaining the same. Necessity is essentially different from compulsion, which is external force operating in opposition to judgment or inclination; whereas necessity excludes all foreign controul, and allows no influence besides that of motive, as including the bias of the mind as well as the end in view.

The fact contended for by the Necessarians is, that the same volitions certainly and invariably follow the same motives or previous circumstances, and that there can be no change in the volition, but in consequence of a correspondent change in the previous circumstances, that is, in the views or state of the mind. If, they say, definite volitions be the invariable result of definite previous circumstances, there must be some reason for, some cause of this constant conjunction of motive and volition: this *cause*, known or unknown, is called necessity: and therefore, the word necessity, like the words gravitation, electricity, magnetism, and many others, is a term invented to express the undefined cause of a known effect. It is also said, that the doctrine of necessity, asserting simply the constant invariable conjunction of motive with volition, might with equal propriety have been denominated by the less invidious name of *certainty*. See CAUSE and MOTIVE.

Mr. Hobbes, who is said to have been the first who understood and maintained the proper doctrine of *philosophical* necessity, gives the following account of it, in his *Leviathan*, p. 108. Liberty and necessity are consistent: as in the water, that hath not the liberty but a necessity of descending in the channel; so likewise in the actions, which men voluntarily do, which, because they proceed from their will, proceed from liberty; and yet, because every act of man's will, and every desire and inclination, proceedeth from some cause, and that from another cause, in a continual chain (whose first link is in the hand of God, the first of all causes), proceed from necessity: so that to him, who could see the connections of those causes, the necessity of all men's voluntary actions would appear manifest: and, therefore, God, that seeth and disposeth all things, seeth also, that the liberty of man, in doing what he will, is accompanied with the necessity of doing that which God will, and no more or less; for though men may do many things, which God does not command, nor is, therefore, the author of them, yet they can have no passion, will, or appetite to any thing, of which appetite God's will is not the cause: and did not his will assure the necessity of man's will, and consequently, of all that on man's will dependeth, the liberty of men would be a contradiction and impediment to the omnipotence and liberty of God.

Mr. Collins, one of the most admired writers on the subject of necessity, has stated the question concerning human liberty in the following manner: man, he says, is a necessary agent, if all his actions are so determined by the causes preceding each action, that not one past action could possibly not have come to pass, or have been otherwise than it hath been; nor one future action can possibly not come to pass, or be otherwise than it shall be. But he is a free agent, if he is able, at any time, under the circumstances and causes he then is, to do different things; or, in other words, if he is not unavoidably determined, in every point of time, by the circumstances he is in, and causes he is under, to do that one thing he does, and not possibly to do any other. According to this state of the question, he undertakes to prove, that man is a necessary agent; and that there neither is, nor can be such thing as liberty. 1. He appeals to experience; alleging, that though the

vulgar urge this in proof of liberty, it is not a proof of it: that many celebrated philosophers and theologians, both ancient and modern, have given definitions of liberty, that are consistent with fate or necessity: that some great patrons of liberty do, by their concessions in this matter, destroy all arguments from experience; that all the actions of men may be ranked under the four heads of perception, judging, willing, and doing as we will; and that experience does not prove any of these to be free; and that experience not only does not prove liberty, but, on the contrary, men may see, by experience, that they are necessary agents. It is, says he, matter of experience, that man is ever determined in his willing; we experience perfect necessity; and they, who think liberty a matter of experience, yet allow, that the will follows the judgment of the understanding, and that when two objects are presented to a man's choice, one whereof appears better than the other, he cannot choose the worst.

This argument from experience or consciousness, which the Libertarians urge in favour of their scheme with peculiar force, supposes that we never do nor can form a volition, or perform a voluntary motion without an assignable motive; that the vigour of the action is uniformly proportioned to the vigour of the motive: and that as motives approach to equality, the choice becomes more difficult; whence it is thought reasonable to conclude, that if the motives were perfectly equal no choice could be made. In this connection it is proper to remark, that all the appeals to consciousness in favour of the doctrine of necessity apply to voluntary operations of the mind, to suspending the choice, comparing, deliberating, and such like, as well as to external actions. See LIBERTY and MOTIVE.

2. Man is a necessary agent, because all his actions have a beginning; for whatever has a beginning must have a cause, and every cause is a necessary cause: and if any action whatsoever can be done without a cause, then effects and causes have no necessary relation; and, consequently, we should not be necessarily determined in any case at all. Much stress has been laid by the Necessarians on the argument deduced from the relation of cause and effect. An ingenious and ardent defender of the doctrine of necessity illustrates this argument by the following observations. Certain consequences are found in fact invariably to follow certain antecedents. The antecedent circumstances are said to be the cause, and the consequents the effect. Philosophers, it is said, who study with attention the phenomena of nature, are better acquainted with antecedent circumstances than ignorant persons, and form a different and more correct judgment of the causes of those phenomena; and the circumstances really previous to the effect, whether known or unknown, are considered as the proper causes of the effect. (See CAUSE.) The invariable connection between antecedents and consequents gradually produces an association of ideas so fixed, as to excite a firm, unhesitating expectation of the consequents wherever the antecedents are observed to occur. From the uniform conjunction of antecedents and consequents, we always infer that there must be some sufficient reason for this conjunction; or, in other words, that constant conjunction implies necessary connection, whether we perceive it or not. If the effect produced is different from what we have been used to expect, we immediately conclude that there is some change in the previous circumstances. Definite volitions are found by experience to follow definite states of mind, as invariably as natural phenomena follow their known antecedents. The observation of this fact generates the same unhesitating expectations of definite actions in definite circumstances, as in the case of natural phenomena. Hence it



it follows, that upon principles precisely the same with those upon which we reason and judge in the case of natural phenomena, "states of mind and motives," may be called "causes," and "volitions," "effects;" "necessary connection" may be argued from "constant conjunction," and a variation in the volition, when the previous circumstances remain precisely the same, is either a "miracle," or an "impossibility." From this kind of reasoning it has been inferred, that liberty of action is impossible, because it implies "an effect without a cause." On the other hand, it has been replied, that a free action is an effect produced by a being who had power and will to produce it; and therefore it is not an effect without a cause. If, indeed, we allow, with the author above cited, and other Necessarian writers, that a "cause" is justly defined to be "such previous circumstances as are constantly followed by a certain effect," it would follow, that an event not preceded by circumstances that determined it to be what it was, would be, as Dr. Reid says, not an *effect* without a cause, which is a contradiction in terms, but an *event* without a cause, which he holds to be impossible. It is necessary, therefore, to inquire, whether that above stated be the only definition that can be given of a cause." For the result of this inquiry, see the article CAUSE.

3. Liberty, says Mr. Collins, would not be a perfection, but an imperfection; whereas, on the contrary, necessity is an advantage and a perfection. It is allowed, however, by an acute and zealous advocate for the doctrine of necessity, to whose statement of the controversy on this subject we often refer, that philosophical liberty, liberty of indifference, or the power of choosing where objects or motives are equal, is a perfection; and that it may exist in the Supreme Being, and that he has in some cases already exercised this liberty. Without it, in certain supposable cases, the Deity could not act at all, or must necessarily choose the inferior object when the superior was equally in his view, for want of power to make a choice amongst equals. But this liberty of indifference, it is said, though a perfection, is only a natural attribute, and not a moral excellence. There can be no merit, though there may be great advantage, in a power of choosing out of equal things. Admitting that this kind of liberty is an attribute of God, it must obviously follow, that every argument adduced to prove it to be a contradiction, or to imply the existence of an effect without a cause, is fallacious; and that there appears to be no reasonable ground for denying the possibility of its being communicated to the intelligent creatures of God. Nevertheless, the Necessarians contend, that this possibility, if conceded, will by no means prove that such a power has actually been communicated to any; much less that the possession of it is essential to moral agency and responsibility. On the other hand, it may be strongly and not improperly urged, that, if philosophical liberty be a "communicable perfection," this view of it affords a presumption that the Creator has actually communicated it to his intelligent, moral, and accountable offspring; more especially if it can be evinced from other considerations that so far from being inconsistent with the security and improvement of virtue, it contributes to promote them.

Whether philosophical necessity be a perfection and benefit or not, is a question which has been very differently determined by Libertarians and Necessarians: the former contending that it degrades the dignity of man, that it is inconsistent with proper agency, that it annihilates virtue and vice, merit and demerit, that it is inconsistent with moral discipline, and with the justice of reward and punishment, that it confounds natural and moral qualities,

both being upon this hypothesis constitutional and unavoidable, that it is an encouragement to vice, by tranquillizing the guilty mind and superseding all motives to repentance, that it discourages all attempts for the reformation of others, and that it involves predestination and fatalism, checks virtuous exertion and activity, makes God the author of sin, and is inconsistent with his veracity in the declarations and promises, the invitations and threatenings, of the Scriptures. Such are the consequences charged on the doctrine of necessity by the Libertarians, whence they conclude, that it is neither an excellence nor a benefit. Whereas the Necessarians contend, that philosophical liberty confounds the distinction between virtue and vice, that it is dangerous to virtue, by encouraging inexperienced and thoughtless persons, confiding in a self-determining power, to venture into circumstances of temptation, that it is inconsistent with moral discipline, confounds all moral distinctions, and subverts the foundation of approbation and disapprobation, of praise and blame, of reward and punishment, that it leads to atheism, by sapping the foundation of the principal argument for proving the existence of God, *viz.* the connection between cause and effect, and that it is inconsistent with the moral perfection of any being, and particularly with the necessary rectitude of God. On the other hand, philosophical necessity, as its advocates maintain, is the only theory which is reconcilable to the existence of virtue and of moral obligation, in connection with the theory of association, of which it is an essential part; it accounts satisfactorily for the phenomena of habit in general, and, in particular, of moral habits, it lays the only proper foundation for moral discipline, and gives meaning and propriety to the judgments which men form, and the language by which they express the merit or demerit of action and character; and, in short, that it is attended with many beneficial practical consequences.

Mr. Edwards, an acute writer on this subject, has endeavoured to prove, that liberty of indifference is not only not necessary to virtue, but utterly inconsistent with it; and that all habits and inclinations, whether virtuous or vicious, are inconsistent with the Arminian notions of liberty and moral agency. And Dr. Priestley observes, that the sense of self-reproach and shame is excited by our finding that we have a disposition of mind leading to vice, and on which motives to virtue, in particular cases, have had no influence. If we ask, whence proceeds that disposition, and how it comes to pass, that motives to virtue had not a greater influence, we must ultimately ascribe the inefficacy of the one, and the evil tendency of the other, to God, who made us what we are, and placed us in the situation which we occupy. Dr. Priestley overcomes this difficulty by alleging, that the distinction between things natural and moral entirely ceases in the scheme of necessity; that the vices of men come under the class of common evils, producing misery for a time, but like all other evils, in the same great system, ultimately subservient to greater good. In this light, he says, every thing without distinction may be ascribed to God. And hence it has been concluded, that the doctrine of philosophical necessity is inseparably connected with that of optimism. It teaches us to see God in every thing, and every thing in God. However, Dr. Priestley acknowledges, that this is a view of moral evil, which, though innocent and even useful in speculation, no wise man can or would choose to act upon himself, because our understandings are too limited for the application of such a means of good; though a being of infinite knowledge may introduce it with the greatest advantage. If there be any foundation for the doctrine of necessity, *i. e.* if all events arise from preceding



preceding situations, and the original situations of all things, together with the laws by which all changes of situation take place, were fixed by the Divine Being, there can be no difference whatever, with respect to his causation of one thing more than another, and even whatever takes place in consequence of his withholding his special and extraordinary influence, is as much agreeable to his will as what comes to pass in consequence of the general laws of nature. But our supposing that God is the author of sin (as by the scheme of necessity he must in fact be the author of all things), by no means implies, that he is a sinful being; for it is the disposition of mind, and the design, which constitute the sinfulness of an action. If, therefore, his disposition and design be good, what he does is morally good. To the same purpose he observes, that the proper foundation; or rather the ultimate object of virtue is general utility; since it consists of such conduct as tends to make intelligent creatures the most truly happy in the whole of their existence; though, with respect to the agent, no action is denominated virtuous, that is not voluntary, or that does not proceed from some good motive. And this reasoning he applies to the Deity, who pursues the happiness of his creatures by such means as are best calculated to secure that end, and which are sanctified by it. And he farther adds, that the Deity may adopt some things, which he would not have chosen on their own account, but for the sake of other things, with which they were necessarily connected.

With respect to the practical influence of the different speculative opinions that have been maintained on this subject, Dr. Reid has introduced into the discussion of the controverted the following appropriate remarks. In the present state, we see some who zealously maintain the doctrine of necessity; others who as zealously maintain that of liberty. One would be apt to think, that a practical belief of these contrary systems should produce very different conduct in them that hold them; yet we see no such difference in the affairs of common life. The fatalist deliberates, and resolves, and flights his faith. He lays down a plan of conduct, and prosecutes it with vigour and industry. He exhorts and commands, and holds those to be answerable for their conduct to whom he hath committed any charge. He blames those that are false or unfaithful to him, as other men do. He perceives dignity and worth in some characters and actions, and in others demerit and turpitude. He resents injuries, and is grateful for good offices. If any man should plead the doctrine of necessity to exculpate murder, theft, or robbery, or even wilful negligence in the discharge of his duty, his judge, though a fatalist, if he had common sense, would laugh at such a plea, and would not allow it even to alleviate the crime. In all such cases, he sees that it would be absurd not to act and judge as those ought to do who believe themselves and other men to be free agents; just as the sceptic, to avoid absurdity, must, when he goes into the world, act and judge like other men who are not sceptics. If the fatalist be as little influenced by the opinion of necessity in his moral and religious concerns, and in his expectations concerning another world, as he is in the common affairs of life, his speculative opinion will probably do him little hurt. But if he trust so far to the doctrine of necessity, as to indulge sloth and inactivity in his duty, and hope to exculpate himself to his maker by that doctrine, let him consider whether he sustains this excuse from his servants and dependents, when they are negligent or unfaithful in what is committed to their charge.

Upon "the opinion of necessity considered as influencing practice," we refer to an excellent chapter in the "Analogy" of bishop Butler.

4. Liberty is inconsistent with the divine prescience; for if God foreknows the existence of any thing, as it depends on its own causes, that existence is no less necessary than if it were the effect of his decree: for it no less implies a contradiction, that causes should not produce their effects, than that an event should not come to pass that is decreed by God.

A contingent event, says Mr. Belsbam, to whom we have already referred, depending upon the choice of an agent, whose volitions are formed by a self-determining power, independent of motive, having no certain or necessary connection with previous circumstances, must consequently be uncertain till the previous volition, which ordains its existence, actually takes place. Till that instant it either may, or may not, come to pass. Therefore certainly to foreknow a contingent event, which is, in other words, to know that a future contingent event will certainly take place, would be the same as to know that an event, which is in its own nature uncertain, is at the same time certain, that is, to know a thing to be what it is not; which is a contradiction in terms. The prescience of God, says the same author, excludes the liberty of indifference from all his rational creatures, as well as from mankind: for under the government of God no event can be contingent. And thus liberty of choice, in the only case in which liberty is a perfection, is left with the Supreme Being, who is the Cause of all causes, and the only proper agent in the universe.

This argument for necessity has been urged by a variety of writers; and the advocates for liberty have felt its force, and endeavoured to obviate it. Some have actually given up the divine prescience, as far as it respects contingent events; some have allowed the seeming contradiction, implied in the foreknowledge of a contingent event, and have acknowledged themselves incapable of removing it; others have endeavoured to reconcile the foreknowledge of God and the liberty of man, by alleging, that there is a great difference between God's foreknowledge and his decrees, with regard to the necessity of future events; for God's prescience has no influence at all on our actions: his infallible judgment, concerning contingent truths, does not more alter the nature of the things, and cause them to be necessary, than our judging right, at any time, concerning a contingent truth, makes it cease to be contingent; or, than our sense of a present truth is any cause of its being true or present.

In the argument, says Dr. Clarke, drawn against liberty from the divine prescience, it must not first be supposed that things are in their own nature necessary; but from the divine prescience or power of judging infallibly, (which power is as much more extensive and infallible than in man, as the divine nature and understanding are superior to ours,) concerning free events, it must be proved, that things otherwise supposed free, will, therefore, unavoidably become necessary, which can no more be proved, than it can be proved that an action, supposed at this present time to be free, is yet (contrary to the supposition) at the same time necessary; because, in all past time, whether foreknown or not foreknown, it could not, upon that very supposition of its being now freely done, but be future.

In another place he acknowledges, that, though it is impossible for us to explain distinctly the manner how God can foresee future events, without a chain of necessary causes, yet we may form some general notion of it. For, as a man, who has no influence over another person's actions, and yet often perceives before-hand what the other will do; and a wiser and more experienced man will still, with greater probability, foresee what another, whose disposition he is perfectly



fectly acquainted with, will in certain circumstances do; and an angel, with still much less degree of error, may have a farther prospect into men's future actions: so it is very reasonable to apprehend, that God, without influencing men's wills by his power, yet by his foresight cannot but have as much more certain a knowledge of future free events than either men or angels can possibly have, as the perfection of his nature is greater than that of theirs. The certainty of foreknowledge, says this excellent writer, does not cause the certainty of things, but is itself founded on the reality of their existence; nor does it imply any other certainty than such as would be equally in things, though there was no foreknowledge; nor again does this certainty of event, in any sort, imply necessity. To the same purpose, Origen has long ago observed, that prescience is not the cause of things future, but their being future is the cause of God's prescience that they will be.

Dr. Reid, in discussing the argument deduced from the prescience of God in favour of necessity, observes that the necessity of the event, foreseen by the Deity, may be thought to be a just consequence, either barely from its being certainly future, or barely from its being foreseen, or from the impossibility of its being foreseen, if it was not necessary. The first mode of representing this argument is proved by the authority of Aristotle, who held the doctrine of liberty, but believing, at the same time, that whatever is certainly future must be necessary, in order to defend the liberty of human actions, maintained, that certain great events have no certain futurity; an opinion which is not maintained by any modern advocate for liberty. It does not follow by any rule of reasoning, that because an event shall certainly be, therefore its production must be necessary. The manner of its production, whether free or necessary, cannot be concluded from the time of its production, whether it be past, present, or future. That it shall be, no more implies that it shall be necessarily, than that it shall be freely produced; for neither present, past, nor future, have any more connection with necessity than they have with freedom. Although it be granted, that from events being foreseen, we may justly conclude that they are certainly future, it does not follow from their being certainly future, that they are necessary. If by the argument above stated it be meant, that an event must be necessary, merely because it is foreseen, this is not a just consequence: for it has often been observed, that prescience and knowledge of every kind, being an immanent act, has no effect upon the thing known. Its mode of existence, whether it be free or necessary, is not in the least affected by its being known to be future, any more than by its being known to be past or present. The Deity foresees his own future free actions, but neither his foresight nor his purpose makes them necessary. If the argument be thus understood, it is impossible that an event which is not necessary should be foreseen, and therefore every event that is certainly foreseen must be necessary, it will be requisite before we draw the conclusion to prove, that no free action can be certainly foreseen. With regard to this Dr. Reid observes, 1. That every man, who believes the Deity to be a free agent, must believe that this proposition, so far from being capable of proof, is certainly false. 2. That every man, who believes that it is an absurdity or contradiction that any free action shall be certainly foreseen, must believe, if he would be consistent, either that the Deity is not a free agent, or that he does not foresee his own actions; nor can we foresee that he will do what is right, and will fulfil his promises. Dr. Priestley has taken great pains to prove this proposition, and indeed the necessarian system very materially depends upon it. As certainly, says this

learned writer, as nothing can be known to exist but what does exist; so certainly can nothing be known to arise from what does exist, but what does arise from it, or depend upon it. But, according to the definition of the terms, a contingent event does not depend upon any previous known circumstances, since some other event might have arisen in the same circumstances. Here the thing to be proved, says Dr. Reid, is not that a contingent event cannot be known to arise necessarily from what exists, but that a contingent future event cannot be the object of knowledge. To draw the argument to this conclusion, it must be put thus: Nothing can be known to arise from what does exist, but what arises necessarily from it; but a contingent event does not necessarily arise from what does exist; therefore a contingent event cannot be known to arise from what does exist. In this legitimate conclusion, the first proposition assumes the thing to be proved; and, therefore, the argument is what logicians call "*petitio principii*." After pointing out some other defects in Dr. Priestley's argument, Dr. Reid suggests the following reflections, with a view of shewing that it is not impossible that the future free actions of men may be certainly foreknown. He begins with observing, that as man does not possess this kind of knowledge, we find it difficult to conceive how it can belong to any other being. The prescience of the Deity must be different, not only in degree, but in kind, from any knowledge we can attain of futurity. But though we can have no conception how the future free actions of men may be known by the Deity, this is not a sufficient reason for concluding that they cannot be known. Of the knowledge and operations of the Deity, in other respects, we must be content to confess our ignorance. Can we conceive how we ourselves have certain knowledge by those faculties with which God has endowed us? The analogy that subsists between the prescience of future contingents and the memory of past contingents deserves attention. The last we possess in some degree, and therefore do not hesitate to acknowledge that it may be perfect in the Deity; but the first we have in no degree, and therefore we are apt to think it impossible. In both, the object of knowledge is neither what presently exists, nor has any necessary connection with what presently exists. Every argument, brought to prove the impossibility of prescience, proves, with equal force, the impossibility of memory. If it be true that nothing can be known to arise from what does exist, but what necessarily arises from it, it must be equally true, that nothing can be known to have gone before what does exist, but what must necessarily have gone before it. If it be true that nothing future can be known, unless its necessary cause exist at present, it must be equally true that nothing past can be known, unless something consequent, with which it is necessarily connected, exist at present. If the fatalist should say, that past events are indeed necessarily connected with the present, he will not surely venture to say, that it is by tracing this necessary connection that we remember the past. Why then should we think prescience impossible in the Almighty, when he has given us a faculty which bears a strong analogy to it, and which is no less unaccountable to the human understanding than prescience is. It is more reasonable, as well as more agreeable to the sacred writings, to conclude with a pious father of the church: "*Quo circa nullo modo cogimur, aut retentâ præscientiâ Dei tollere voluntatis arbitrium, aut retento voluntatis arbitrio, Deum, quod nefas est, negare præscium futurorum; sed utrumque amplectimur, utrumque fideliter et veraciter confitemur; illud ut bene credamus; hoc ut bene vivamus.*"

It cannot reasonably be disputed, that there is an essen-



tial difference between the foreknowledge and permission of events, and the preordination and production of them; and the scheme of necessity seems directly to charge God with being the efficient cause or author of those vices and evils, which arise from circumstances and connections of his previous and absolute appointment. Indeed, many of the advocates of this scheme will not admit the consequence that seems to be fairly deducible from their opinion: however, Dr. Priestley very candidly allows it. It certainly (says he) sounds harsh to vulgar ears to say, that in all those crimes that men charge themselves with, and reproach themselves for, God is the agent: and that, in such cases, they are in reality no more agents than a sword is an agent when employed to commit a murder. It does require strength of mind not to startle at such a conclusion; but then it requires nothing but strength of mind; i. e. such a view of things as shall carry us beyond false and fallacious appearances. When the Libertarians have pleaded, that if the doctrine of necessity be true, they are under a perpetual and unavoidable delusion, inconsistent with the moral perfections of God, because all men believe, and cannot but believe, that they possess liberty of choice; it is answered, that the ideas of men in general extend no farther than to practical liberty, or the power of doing what they please; and that men are led to believe that they could have acted differently in the same circumstances merely by superficial views of human nature. The Necessarians, however, as we have had occasion to notice in the preceding part of this article, allege, that the doctrine of philosophical necessity does not make God the "approver" of evil, nor represent him as choosing it for its own sake; though the libertarian finds it difficult to conceive how the Supreme Being should not approve what he ordains, and that evil, natural and moral, of which he is the author. They indeed suppose, that a certain quantity of evil of both kinds was unavoidable in a system upon the whole most worthy of the Supreme Being, and eventually productive of the greatest good. Whereas the libertarian cannot reconcile with his ideas of the wisdom, rectitude, benevolence, and power of the Creator of the world, the establishment of a system, out of which sin and suffering necessarily arise. The advocates for necessity have alleged, and urged with seeming confidence and triumph over the Libertarians, that all these consequences follow from the divine prescience which was thought most alarming in the scheme of necessity: and particularly God's being the cause of moral evil. For, as they say, to suppose God to foresee and permit what it was in his power to have prevented is the very same thing, as to suppose him to will, and directly to cause it. He distinctly foresees all the actions of a man's life, and all the consequences of them: if, therefore, he did not think any particular man and his conduct proper for his plan of creation and providence, he certainly would not have introduced him into being at all. In this reasoning, says Dr. Reid, we may observe, that a supposition is made which seems to contradict itself. That all the actions of a particular man should be distinctly foreseen, and, at the same time, that that man should never be brought into existence, seems to be a contradiction; and there is the same contradiction in supposing any action to be distinctly foreseen and yet prevented. For if it be foreseen, it shall happen; and if it be prevented, it shall not happen, and therefore could not be foreseen. The knowledge here supposed is neither prescience nor science, but something very different from both; and called by some metaphysical divines "*scientia media*," in order to distinguish it from prescience. (See *SCIENTIA MEDIA*.) However, waving all disputes about "*scientia media*," it is acknowledged that nothing can happen under

the administration of the Deity, which he does not see fit to permit. The permission of natural and moral evil is a phenomenon which cannot be disputed. To account for this phenomenon under the government of a Being of infinite goodness, justice, wisdom, and power, has, in all ages, been considered as difficult to human reason, whether we embrace the system of liberty, or that of necessity. But, if the difficulty of accounting for this phenomenon upon the system of necessity be as great as it is upon the system of liberty, it can have no weight when used as an argument against liberty. The manner in which the defenders of necessity reconcile their scheme to the principles of theism, has been already stated. Virtue is acceptable to God, and vice displeasing, as the first tends to produce happiness, and the last misery. He is the proper cause and agent of all moral evil as well as good; but it is for a good end, or in order to produce the greater happiness to his creatures. He does evil that good may come, and this end sanctifies the worst actions that contribute to it. All the wickedness of men being the work of God, he must, when he surveys it, pronounce it, as well as his other works, to be very good. "This view of the divine nature, the only one consistent with the scheme of necessity, appears to me," says Dr. Reid, "much more shocking than the permission of evil upon the scheme of liberty. It is said, that it requires only "strength of mind" to embrace it: to me it seems to require much strength of countenance to profess it." If other moral evils, says this author, may be attributed to the Deity, as the means of promoting general good, why may not false declarations and false promises? And then what ground have we left to believe the truth of what he reveals, or to rely upon what he promises? The defenders of the doctrine of necessity are charged by our author with adopting two hypotheses, the one limiting the moral character of the Deity, and the other limiting his power; and he observes, that if some advocates of liberty, by limiting too rashly the divine prescience, in order to defend that system, have raised high indignation in their opponents, they have equal ground of indignation against those, who, to defend necessity, limit the moral perfection of the Deity, and his almighty power. Let us suppose, however, that amidst the variety of beings, to whom God has given existence in different gradations of rank and of faculties, man should occupy a certain station, and be endued with that liberty, which the Necessarians allow to be a communicable excellence; and then consider, what consequences may be fairly drawn from God's *permitting* the abuse of liberty in those agents on whom he has bestowed it. If it be asked, Why does God permit so much sin in his creation? This is a question which no finite imperfect being can presume to answer, nor can any mortal say to him, Why dost thou thus? The ingenious and inquisitive may frame hypotheses for solving this difficulty; but whilst we have satisfactory reasons for believing, that the Judge of the earth doeth what is right, it becomes us to acknowledge that the reasons and ends of his universal government are beyond our knowledge, and perhaps beyond the comprehension of human understanding. This kind of diffidence is not inconsistent with the character either of a divine or a philosopher. After this general concession, suitable both to our nature and state, we may proceed in our attempts to reconcile the permission of evil with the perfections of the Sovereign of the universe. To *permit*, it is said, hath two meanings. It signifies not to forbid: and also not to hinder by superior power. In the first sense God never permits sin. His law forbids every moral evil. By his laws and by his government he gives every encouragement to good conduct, and every



every discouragement to bad. But he does not always, by his superior power, hinder it from being committed. This is the ground of the accusation, on the part of the Necessarians; and this, as they say, is the very same thing as directly to will and to cause it. The only moral attributes that can be supposed inconsistent with the permission of sin are either goodness or justice. The defenders of necessity must, it is said, agreeably to their own principles, maintain, that to will and directly to cause sin, much more not to hinder it, is inconsistent with perfect goodness; nay, that goodness is a sufficient motive to justify the willing and directly causing of it. With them, therefore, the attempt to reconcile the permission of sin with the goodness of God is altogether unnecessary. If the causing of moral evil, and being the real author of it, be consistent with perfect goodness, there can be no pretence for saying, that not to hinder it is inconsistent with perfect goodness. Moreover, what pretence can there be to say, that the permission of sin is perfectly consistent with goodness in the Deity, but inconsistent with justice? Is it not as easy to conceive, that he should permit sin, though virtue be his delight, as that he inflicts misery, when his sole delight is to bestow happiness? Should it appear incredible, that the permission of sin may tend to promote virtue, to them who believe that the infliction of misery is necessary to promote happiness? Of the justice, as well as the goodness of God's moral government of mankind, we have ample evidence in his laws, in his promises, and in all his dispensations. On this part of the subject it is needless now to enlarge.

5. Another argument in favour of necessity is the following: if a man was not a necessary agent, determined by pleasure and pain, there would be no foundation of rewards and punishments, which are the essential supports of society. These would be useless, because if men were free or indifferent to pleasure and pain, they could be no motives to a man to do or forbear any action.

6. Another argument of this same kind is deduced from the nature of morality: for if a man was not a necessary agent, determined by pleasure and pain, he would have no notion of morality, or motive to practise it; and if he were indifferent to pleasure and pain, he would have no rule to go by, and might never judge, will, and practise right. Every act of the will, it is said, is excited by some motive, which motive is the cause of that act: and if volitions are properly the effect of motives, then they are necessarily connected with their motives: whence it is inferred, that volition is necessary, and doth not proceed from any self-determining power in the will. This argument has been illustrated and urged in all its force by many modern writers, from M. Leibnitz to Dr. Priestley, the last and most zealous advocate for necessity: and it has often been answered by Dr. Clarke and others, who have strenuously maintained, that liberty is perfectly consistent with men's acting from a regard to motives. See MOTIVE. See also the preceding part of this article.

7. The doctrine of necessity has fewer difficulties and such as are more easy of solution than those which are peculiar to liberty. It supercedes remorse, so far as it is founded on the belief that it was possible in the same previous circumstances to have acted otherwise. This doctrine countenances the expectation of the ultimate restoration of all the rational creatures of God to virtue and to happiness, an expectation dear to every virtuous and benevolent mind, and uncontradicted, by either the phenomena of nature, or the declarations of revelation. But this conclusion is not a deduction from the doctrine of necessity exclusively of that of liberty. This theory of necessity, it is said, seems

also to connect the complex ideas of praise and blame, reward and punishment, and the supposition of intrinsic merit or demerit of actions independent of their consequences. It is moreover asserted, that the objections against the hypothesis of philosophical liberty are much more difficult of solution than those against the doctrine of necessity: and that founded on the prescience of God, already considered, has been selected as an instance.

8. The doctrine of necessity is a direct inference from that of materialism; so that if the power of thinking be the result of a certain modification of matter, and a certain configuration of brain make a soul, man must be a mechanical being, and subject to the law of necessity. But this argument can have no weight with those who do not see reason to embrace the system of materialism; and even with those who do. Dr. Reid conceives it to be a mere sophism.

The scriptures, according to Dr. Priestley, are favourable to the doctrine of necessity; though he does not think that the sacred writers were, strictly speaking, Necessarians, for they were not philosophers: but their habitual devotion led them to refer all things to God, without reflecting on the rigorous meaning of their language; and very probably, had they been interrogated on the subject, they would have appeared not to be apprized of the proper extent of the Necessarian scheme, and would have answered in a manner unfavourable to it. It has been said by some, that the doctrine of philosophical necessity, if true, ought to be concealed, because it is difficult of comprehension, and liable to abuse. This, however, is not the language of a liberal and sound philosophy. Perhaps, in modern times, a greater stress has been laid upon this metaphysical speculation than it deserves; and that it has, in some few cases, and when not duly understood, been perverted to licentious purposes. Some indeed have said, that its tendency is licentious, whilst its advocates, as we have seen in this article, represent it as peculiarly favourable to piety and virtue. If those who adopted it are held up to view as persons of distinguished penetration, and as constituting a class of philosophers, who occupy a superior rank to the vulgar, and who manifest discriminating powers, and a freedom from prejudice peculiar to themselves, there may be some danger lest weak minds should be misled by such representations, and that they may serve to excite and cherish conceit and pride. But we are of opinion, that whether the doctrine be true or false, the investigation of it, with those dispositions which ought ever to accompany a becoming study of every kind of subject, and more especially of such subjects as are immediately connected with our duty and happiness, can do no injury. We are ready to allow with one of its most zealous advocates, that Necessarians, whatever may be the supposed tendency of their opinions, are not less virtuous, nor worse members of society, nor "less attentive to discharge the duties of life, than the loudest declaimers for natural liberty."

The reader who is desirous of being farther acquainted with the reasoning of different writers on this subject, may consult the Collection of Papers between Leibnitz and Clarke, 1717. Collins's Philosophical Inquiry concerning human Liberty, 1735, 3d ed. with Clarke's Answer. Hobbes on Necessity. Edwards on the Freedom of the Will, 8vo. 1775, 4th ed. Priestley's Doctrine of Philosophical Necessity, 8vo. 1777. Correspondence between Dr. Price and Dr. Priestley, 8vo. 1778. Hartley's Observations on Man, 8vo. 1749. Palmer's Remarks on Priestley, and Priestley's Reply. Reid's Essays on the Active Powers of Man, 4th ed. iv. Gregory's Essay on the Difference between the Relation of Motive and Action, and Cause and Effect. Crombie's Essay on Philosophical Necessity. Belsham's Elements of



the Philosophy of the Mind, &c. 8vo. chap. ix. See LEIBNITZIAN *Philosophy*, and LIBERTY.

NECESSITY *Fort*, in *Geography*, an American fort situated in the Great Meadow, Virginia, within four miles of the W. branch of Maryland, and on the N. side of the head-water of Red-stone creek, which discharges itself from the E. into the Monongahela, in N. lat.  $39^{\circ} 43'$ ; above 16 miles from the spot where this fort was erected; 238 miles W. by N. from Alexandria, and 258 N.W. of Fredericksburg. This spot deserves notice as it was the first scene on which general Washington displayed his abilities as a commander. In 1753 this gallant officer, in the 22d year of his age, being then a colonel, having the command of 300 men, defeated the French, and when M. de Villiere sent a force, amounting to 900 men besides Indians, Washington, in this unfinished fort, with his small body of troops, defended himself so well as to constrain the French officer to grant him honourable terms of capitulation.

NECESSITY, in *Law*, is one of the causes that occasions a defect of will. See WILL.

NECESSITY, *Homicide* by. See HOMICIDE.

NECHANETZ, in *Geography*, a town of Bohemia, in the circle of Konigingratz; eight miles W. of Konigingratz.

NECK, the part or point of an animal to which the head is attached. In the horse it should be neat, thin, and have but little flesh upon it. To be well shaped it should, at its growing from the withers, rise with a slope upwards, diminishing by degrees toward the head. In mares, it is supposed by some a good quality to have their necks somewhat gross, and charged with flesh, as they are generally too fine and slender.

The neck contributes much to the making a horse light or heavy on the hand, according as it is fine and well-shaped or coarse. And in horses as well as cattle it is of much consequence to have the neck falling well into the shoulder.

NECK. The parts composing this division of the body are described in various articles of the Cyclopædia. The principal bulk of the neck is made up of the cervical vertebræ, covered by numerous muscles concerned in moving these bones, in the motions of the head and of the shoulder. The pharynx and œsophagus lie in contact with the front of the vertebral column, and the larynx and trachea in front of these. The anterior part of the thyroid cartilage makes that remarkable prominence in the neck of the male, called the pomum Adami. The large blood-vessels of the head pass through the neck on the front of the spine, and some important nerves take nearly the same course. The organs just enumerated, connected rather loosely to each other by cellular substance, and surrounded by the integuments, compose the neck. See SPINE, LARYNX, PHARYNX, CÆSOPHAGUS, &c.

NECK, *Derby*. See BRONCHIOCELE.

NECK, *Deformity* of. See WRYNECK.

NECK, *Dislocation* of. See LUXATION.

NECK, *Wounds* of. See WOUNDS.

NECKS, *the, of quadrupeds*, Dr. Derham observes, are always equal to the length of their legs: this is contrived by nature, to enable them to reach the ground for their food without stooping the body.

Indeed the elephant is an exception from the rule; its neck is very short; but then it has a peculiar provision by a proboscis or trunk.

Another thing remarkable in the necks of graminivorous quadrupeds is a strong, tendinous, and insensible aponeurosis, or ligament, braced from the head to the middle of the back; by means of which they are enabled constantly to hold down

the head, though very heavy, to gather their food without pain or labour.

NECKS, *the, of birds*, are longer than those of any other animal; and longer in such as have long legs than in those that have short, either for gathering up their meat from the ground, or striking their prey in the water, except in web-footed fowl, which are, by reversing their bodies, destined to search for food, at the bottom of waters: birds, and especially those that have long necks, have the power of retracting, bending, or stretching them out in order to change their centre of gravity, from their legs to their wings. See *Anatomy of BIRDS*.

NECK *Verse*, the Latin sentence, *Miserere mei Deus*, was thus called, because the reading of it was made a test, by which to distinguish those who, in presumption of law, were qualified in point of learning, and admissible to benefit of clergy: but this ground of distinction was set aside by 5 Ann. cap. 6. See CLERGY.

NECK, in the *Manege*. See CARRYING.

NECK of the *casabel*, in *Artillery*, is that part betwixt the breech mouldings and the casabel.

NECK of a *gun* is that part between the muzzle mouldings and the cornice-ring.

NECKAR, in *Geography*, a river of Germany, which rises in the Black Forest, and joins the Rhine at Manheim.

NECKER, JAMES, in *Biography*, a statesman and financier, who acted a very distinguished part during the early part of the French revolution, was born at Geneva, in the year 1732, where his father was professor of the civil law in the college. He received a good education, and when he was in his fifteenth year he was sent to Paris, where he was employed, first in the banking-house of Vernet, and then in that of Thelluson. Such were the ability and assiduity which he displayed in this station, that he rose rather hastily to the post of first cashier, and afterwards to be a partner in the house. His speculations turned out highly advantageous for the concern, and he accumulated a fortune in a very short time. Upon the death of Thelluson he established a bank of his own, in partnership with Girardot and Haller, the son of the great Haller. His reputation for financial knowledge caused him, in 1776, when the French finances were in a disordered state, to be appointed director, and soon after comptroller-general of that department of state. He had, in the preceding reign, been selected as the properest person to adjust some differences subsisting between the East India company and the crown, and had discharged his trust with such rare discretion as to challenge the approbation of both parties. At the period we are now speaking of he was possessed of the most distinguished and acknowledged probity, so that his appointment would have excited no surprize, had it not been the constant policy of the court of France carefully to exclude aliens from the country, and established faith, from the controul of their revenue. This, therefore, was an instance of enlargement of mind and liberality of sentiment, that has been frequently held up to mark the prominent features of the reign of Lewis XVI. Necker was in fact the first Protestant, since the revocation of the edict of Nantes, who had held any important place in the French administration. Economy and regularity were the leading points of this gentleman's financial government. He suppressed many useless offices, established provincial assemblies, and restored public credit, though his enemies asserted that his reforms, or rather pretended reforms, were made at the expence of improvident loans, which left a great additional burden on the state. Whether his measures were really wise and solid, or merely specious, may perhaps be matter of dispute, but it cannot be denied that his intentions were pure, and his conduct



duct disinterested. He refused all emolument for his services, and advanced a large sum to government from his private property, which he never drew from the public funds. His administration was generally popular, but in proportion to the regard and attachment of the people, his enemies at court increased, and after having filled the office of minister of finance for five years, he resigned. Previously to this he had published his "Compte Rendu," which was a statement of what he had done in the financial department, and what were his views of this important branch of public policy. It was written to interest the feelings, and had a considerable effect upon the public mind. This was followed by a work entitled "De l'Administration des Finances," which treated the subject more at large, and which was read and circulated with great avidity, and it had, unquestionably, a powerful influence in exciting the popular attention to matters of government. When M. Calonne was appointed to the office which Necker resigned, he made an attack, before the assembly of Notables, upon the veracity of Necker's statements. The latter drew up a reply, which he transmitted to the king, who intimated that if he would forbear making it public, he should shortly be restored to his place. This he refused, and appealed to the nation by publishing his defence, which was so displeasing to the court, that he was exiled to his country seat at St. Ouen, at the distance of 120 miles from the capital. During his retreat from the busy world he wrote his work entitled "De l'Importance des Opinions Religieuses," in which he speaks of religion like one who felt its power operating on his own mind, and who was fully convinced of its importance both to individuals and society. When the boasted exertions of Calonne had only augmented the deficiencies of the revenue, and the incapacity of another minister, Brienne, had become notorious, nothing was left to the court but to recal Necker, whose dismissal and banishment had rendered him more popular, and whose virtues had confirmed the confidence which his talents had inspired. It was in August 1788 that this gentleman was reinstated in his former post, to the apparent satisfaction of the court, as well as to the real joy of the people. If the talents of this great man had been severely exercised amidst a war which agitated almost the whole of Europe, when he occupied the post of comptroller-general, his situation was not less delicate and arduous, when on the eve of civil commotions he was again called to direct the finances of France. At this time the nation groaned under a debt of more than two hundred millions sterling, which even twenty-five years ago was thought sufficient to overwhelm any nation, though now we, in this country, can contemplate a debt of thrice its magnitude without alarm or apprehension. The acclamations which welcomed monsieur Necker to the capital could not banish from his mind the difficulties with which he had to struggle. He was aware that de Calonne and the archbishop of Sens had both sunk under the public distress, and the impracticability of raising the necessary supplies; and he well knew that the evil was not diminished, and unless some expedient could be hit on to re-establish public credit, he foresaw his own fate must be similar to that of his predecessors. His first intentions were to recal the banished members of the parliament of Paris, and to restore that body to its functions; to replenish the treasury, which he found almost empty; and to relieve the scarcity of corn under which the kingdom, and the capital in particular, then laboured. His next plan was the convocation of the States-General, which had been already promised by the king, and which, in fact, proved the immediate fore-runner of the revolution. Necker was particularly blamed by his adversaries, who were watching for an opportunity of reproaching his

conduct, for having consented that the number of members of the *Tiers Etât* should be equal to that of the nobles and clergy united. It was soon foreseen by those who considered with attention the situation of the two parties, that the nobility and clergy would, to preserve their influence, urge their claim to vote by orders, while the representatives of the great mass of the people would be equally strenuous that every question should be decided by a plurality of voices.

At the opening of the States, Necker delivered an elaborate speech, in which it was his misfortune to be desirous of pleasing both parties, and of consequence he obtained the permanent confidence of neither; the acclamations of the multitude still attended him, but several of the deputies of the *Tiers Etât*, as the representatives of the people were denominated, regarded already with suspicion the minister who represented the meeting of the States General, merely as the effect of royal grace, instead of a constitutional right. They were still less satisfied with the system to which he inclined, viz. to decide every question by a majority of orders, instead of voices, while the clergy and nobles recollected with indignation, that his counsels had already shaken their former superiority, and had swelled the commons to an equality, in number, with the other two states. After this he proposed a royal sitting, and drew up a plan of government to be recommended by the king in a speech, which underwent so many alterations as to disgust the minister who wrote it, and who accordingly signified his disapprobation by his absence when it was delivered. In the course of events, the king was persuaded to resist the increasing claims of the popular party, and he determined upon the assembling of troops round the cities of Paris and Versailles; this was the signal for the dismissal of Necker, who had raised his voice in the most resolute tone against these measures. On the eleventh of July 1789, a sudden order was brought him, while sitting at table with company, that he should quit the kingdom within twenty-four hours. The manner in which he submitted to this decree fully acquits him of any wish to raise a commotion on his own account. Pretending a sudden indisposition, he retired from company after dinner, took a post-chaise, and with his wife drove first to his country seat, and from thence to Brussels, with all possible expedition. As soon as his dismissal was known, the whole city was in a flame. The destruction of that fortress of despotism, the Bastille, soon followed, and such symptoms of popular fury appeared that the king was glad to send an express urging his return, with even greater celerity than he had caused his banishment. This overtook him at Basil, where he had been first apprized of the revolutionary events at Paris. He determined upon compliance with the invitation, and his return was a scene of triumph, similar, it was said, to that of Cicero from his banishment. On his approach to the capital he was hailed by the enthusiastic shouts of the people, and his entrance into Paris was regarded as a day of public rejoicing. An immense concourse of people pressed to meet him, a numerous guard conducted him with military honours through the city; the air resounded with acclamations of "Long live the Nation! Long live Necker." Every house was illuminated, but it was said that those persons were most distinguished by their demonstrations of joy who had most largely profited by the loans of the minister. The plaudits of the multitude are never of very long duration, and the popularity of Necker had reached its summit, and it was doomed now to decline. As minister of finance he was obliged to propose expedients which of necessity were galling to the people, and his sentiments with respect to the principles of government were far behind those which now began to be avowed by the popular leaders, and he soon became, in  
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the eyes of the revolutionists, an aristocrat, and, as violence predominated, his personal safety was endangered. Mortified, and perhaps alarmed, at the loss of his influence, and at the symptoms of discontent which began to manifest themselves strongly against almost all his measures, he desired to resign, offering to leave, as pledges for his integrity, the money which he had advanced to government, *viz.* about 80,000*l.* sterling, and his house and furniture. His resignation was accepted with much *sang-froid*, and he left Paris with the poignant reflexions of a man, certainly unequal to the duties which he had undertaken, and who had seen that popularity fade away which had supported him in his former trials. In this retreat he was more than once insulted by the very people who, but a few months before, had hailed him as their saviour. He might well exclaim "My happiness has been of very short duration." Gibbon, who passed four days with him at this period, says, "I could have wished to have exhibited him as a warning to any aspiring youth possessed with the demon of ambition. With all the means of private happiness in his power, he is the most miserable of human beings; the past, the present, and the future, are equally odious to him. When I suggested some domestic amusements, he answered, with a deep tone of despair, 'in the state in which I am, I can feel nothing but the blast which has overthrown me.'" Shortly after this, his mind was diverted from public disappointment by the more poignant grief of domestic calamity; his wife died, after a long illness, in which he had attended her with the most affectionate assiduity. He now recalled the native energies of his mind, and had recourse to his favourite occupation of writing, and several works of different kinds were the product of his solitary hours. His principal pieces are entitled "Sur l'Administration de M. Necker, par lui-même;" "Réflexions, &c." which were intended to benefit the king during his captivity and trial: "Du Pouvoir Exécutif," being an essay that contained his own ideas on the executive part of government: "Dernières Vuës de Politiques, et de Finance," of which the chief object was to discuss what was the best form of government France was capable of receiving. Besides these, he published a "Course of Religious Morality," and a novel, written at the suggestion of his daughter, entitled "The Fatal Consequences of a Single Fault." Though deprived of three-fourths of his fortune, he had sufficient for all his wants, and also to indulge his benevolent disposition. He had been placed on the list of emigrants, but the directory unanimously erased his name, and when the French army entered Switzerland, he was treated by the generals with every mark of respect. His talents and conduct have been alike the subject of dispute; but it may be affirmed that though unfit for the stormy scenes of a revolution, he would have been eminently great in common times. Though, for a time, overwhelmed with the shock that hurled him from the pinnacle of greatness, he spent the latter years of his life, in the rational pursuits of a philosopher and man of sound judgment and true taste. His only daughter, who married the baron de Stael, ambassador from Sweden to France, has made herself known to the literary world by several publications, particularly by "Memoirs of the Character and Private Life of her Father," written in a high style of panegyric; and of a novel entitled "Delphine," in which she has suffered her desire of working strongly on the feelings, to overpower, in a great measure, the true notions of good taste and morality. New Ann. Register. History of the Fr. Rev. by Rabaut de St. Etienne. Hist. of France, 1790.

NECKER'S *Island*, in *Geography*, one of the smaller Virgin islands, near the N. coast of Virgin Gorda.

NECKER *Isle*, a small island in the Pacific ocean, consisting of an almost barren rock about 500 toises in length and 60 in height, without a single tree, but having on the summit a good deal of grass. M. La Perouse points it out to navigators, that they may avoid the danger of approaching it: within a space of ten miles from it, no other ground was found besides coral and broken shells. N. lat.  $23^{\circ} 31'$ . W. long.  $164^{\circ} 32'$ .

NECKER *Islands*, a cluster of nine small islands or rocks in the North Pacific ocean, on the W. coast of America, about a league off cape Blanco; so called by La Perouse. N. lat.  $42^{\circ} 58' 56''$ . W. long.  $124^{\circ} 45' 20''$ .

NECKERA, in *Botany*, received its name from Hedwig, "in memory of the most eminent opposer of the doctrine of the sexual propagation of mosses, to whom nevertheless botany is not a little indebted." This was Dr. Natalis Joseph de Necker, botanist to the Elector Palatine, who was born in 1730 and died in 1793. He published a *Linneæan Flora of French Flanders* in 1763; *Methodus Muscorum* in 1771; *Physiologia Muscorum* in 1774; *Elementa Botanica*, teaching the principles of natural arrangement, in 1790; and some other works. We have sufficiently noticed his determined opposition to the sexes of mosses; see *MUSCI*. He also extended his disbelief to other plants, in some measure confounding, like many other writers, their increase by roots or buds, with sexual propagation, as in *Lemna*, and *Sempervivum tectorum*. He even contended that the seeds of Hemp and Mercury were perfected without impregnation; but this is refuted by Linnæus, who proves that no seeds of Hemp are formed, unless the suddenly withered stigma shews it to have been acted upon by the pollen. When the vitality of the part is exhausted, by the accomplishment of its natural purpose, it dies. (See *FECUNDATION of Plants*.) The name in question was originally written, as it ought, *Neckeria*; but the accidental or designed alteration, in Hedwig's great work, has now universally prevailed.—Hedw. Fund. v. 2. 93. t. 8. f. 47—50. Crypt. v. 3. 38—55. Sp. Musc. 200. Schreb. 762. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 1272. Turm. Musc. Hib. 101. Sibth. 304. Michaux Boreal-Amer. v. 2. 307.—Class and order, *Cryptogamia Musci* Nat. Ord. *Musci*.

Eff. Ch. Capsule oblong, from a lateral scaly sheath. Outer fringe of sixteen acute teeth; inner of as many intermediate thread-shaped teeth. Veil smooth.

The habit of *Neckera* is like that of *Hypnum*, under which genus some of its species have been described by Linnæus; but still nearer to *Fontinalis* in the shortness of the fruit-stalk. Accordingly several of the species, more recently discovered, have been referred to the latter genus. (See *HYPNUM* and *FONTINALIS*.) *Neckera* differs, in essential character, from both in its inner fringe, which consists of distinct and separate teeth or bristles; not combined by a membranous base, as in the former; nor connected by transverse lattice-work, as in the latter. Sixteen species are described in the *Species Muscorum* of Hedwig, five of which are British. They are disposed in two sections, and these are each subdivided into two more, according as the leaves are two-ranked or scattered.

#### Section 1. *Fruit-stalk shorter than the capsule.*

In this section seven of Hedwig's species have the stem irregularly branched; and three of these have the leaves elegantly disposed in two ranks, making a flat feather-like figure; which from their polish and transparency, and especially from the crisped or corrugated nature of some species, affords a beautiful spectacle. An example of this is

*N. pennata*. Hedw. Crypt. v. 3. 47. t. 19. (*Fontinalis pennata*; Linn. Sp. Pl. 1571. Ehrh. Crypt. 132. *Sphagnum*



num pennatum undulatum, vaginâ squamofâ; Dill. Musc. 250. t. 32. f. 9. Muscus terrestris major, &c.; Vaill. Par. t. 27. f. 4.)—Stem thread-shaped, decumbent, branched. Branches somewhat compound. Leaves imbricated, two-ranked, lanceolate, corrugated, with an oblique point. Capsule immersed in the sheath.—Native of trunks of trees, in Sweden, Switzerland, France and various parts of Germany, but not in England. We have it however from the Cape of Good Hope, as well as from Nova Scotia, and the west coast of North America, gathered by Mr. Menzies, so that it appears to be widely dispersed over the globe. This moss is perennial, ripening the capsules in spring. The *stems* are three or four inches long, with numerous unequal taper-pointed *branches*, lying flat over each other, all thickly beset with *leaves* spreading likewise in two ranks. Each *leaf* has three or four transverse plaits towards the end, but no ribs, veins, nor serratures. The whole is of a light shining green. *Capsules* light brown, lateral, axillary, solitary, on very short stalks, enveloped by the numerous lanceolate, taper-pointed, scales of the *sheath*, which extend considerably beyond the top of each capsule. *Lid* convex, with a sharp curved point, about half as long as the capsule. *Fringe* pale and delicate. *Veil* slender, reddish.

*N. diffracta*, Hedw. Crypt. v. 3. t. 22; and *undulata*, t. 21; two West Indian species, have blunter foliage, with setaceous scales to the sheath, but otherwise they have much of the aspect of the above. The *leaves* in the former are even in the latter transversely corrugated—*N. glabella*, Sw. Ind. Occ. 1782, (*Leskea glabella*, Hedw. Sp. Musc. t. 59 f. 1—5.) a native of Jamaica, requires to be here added.

Among those with scattered leaves is

*N. heteromalla*. Lateral Neckera. Hedw. Crypt. v. 3. 38. t. 15. Engl. Bot. t. 1180. (*Sphagnum arborescens*; Linn. Sp. Pl. 1570. Hudf. 465. *S. heteromallum* polycephalum; Dill. Musc. 248. t. 32. f. 6. *Fontinalis secundata*; Linn. Meth. Musc. 30. Dickf. Dr. Pl. 18.)—Stem branched, diffuse. Leaves ovate, concave, imbricated every way. Capsules turned to one side. Native of England and Ireland, but, as far as has hitherto been observed, of no other country. Sherard first found it at Badminton, Gloucestershire. This grows in tufts closely pressed to the trunks of trees, and is not uncommon in Norfolk. The *stems* are about 1½ inch long, diffuse, rigid, with pinnate branches, thickly clothed with small, dull-green, ovate, concave, acute, single-ribbed *leaves*, imbricated every way. *Capsules* at the end of short lateral branches, all leaning one way, overtopped by the leaves of their *sheaths*, which are lanceolate and taper-pointed. *Lid* conical, acute, erect. *Veil* torn at the margin.

The rest of this division are *N. filiformis*, Hedw. Crypt. v. 3. t. 16; *hypnoides*, t. 17; *composita*, Hedw. Sp. Musc. 203. t. 46. f. 8—13; and *filicina*, Hedw. Crypt. v. 3. t. 18; all West Indian mosses, discovered by Dr. Swartz. The last has an erect habit, with a naked stem, like a little tree. Their discoverer adds another in his Fl. Ind. Occ. 1794, by the name of *polytrichoides*. (*Hypnum*, Hedw. Sp. Musc. t. 61.), but suspects it, as well as the three last, having hairy veils, may belong to some other genus, perhaps *Orthotrichum*. This we scruple to allow.

Section 2. *Fruit stalk longer than the capsule.*

Six of this section have two-ranked leaves; and two have scattered ones. Among the former are

*N. pumila*. Small Feathery Neckera. Hedw. Crypt. v. 3. 49. t. 20. Engl. Bot. t. 1443. (*Hypnum pennatum*; Dickf. Crypt. fasc. 1. 5. t. 1. f. 8. H. Sicc. fasc. 1. 22. *Fontinalis pennata*; Hudf. 468, excluding the synonyms)—Branches pinnate. Leaves two-ranked, ovate, obliquely

pointed, transversely corrugated. Fruit-stalk scarcely longer than the sheath. Native of trunks of trees in Westmoreland, Sussex and Scotland, nor has it been observed in any other country. No wonder that this moss was mistaken by Mr. Hudson for the first species, or *Fontinalis pennata* of Linnæus. None but himself had ever gathered it, till the writer of this, by a diligent search, in the summer of 1782, found it on trees near Ambleside, as indicated in the Fl. Angl. but without capsules. These Mr. Dickson met with in Sussex, and gave, as we believe, to Mr. Lightfoot. They decided the character between the present plant and *pennata*, and Hedwig's work established the species. The habits of the two plants are much alike, but this is smaller and less strikingly beautiful; the *leaves* are more ovate; and the *fruitstalk* is about as long, sometimes longer, than the close tapering sheath, being twice or thrice the length of its *capsule*. The teeth of the inner *fringe*, in both these species, are very slender, and but half the length of the outer.

*N. crispata*. Crisped Neckera. Hedw. Sp. Musc. 206. Sm. Fl. Brit. 1273. (*Hypnum crispum*; Linn. Sp. Pl. 1589. Engl. Bot. t. 617. *H. pennatum*, undulatum crispum, setis et capsulis brevibus; Dill. Musc. 273. t. 36. f. 12.)—Branches pinnate. Leaves two-ranked, oblong, transversely corrugated. Fruit-stalk twice the length of the sheath.—Native of chalky or limestone countries, in dry woods, very abundant, producing capsules in April. The great size of this species; its regular semilunar plaits; the contrast of shining green and brown in its foliage; all together render it one of the handsomest British mosses. The branched *stems*, leafy throughout, lie over each other in thick elastic horizontal masses, and are excellent for package. The *capsules* are not constantly produced, but when they do occur are abundant, springing from axillary tapering close *sheaths*, which their stalks greatly exceed in length, especially when the *capsule* is fully ripe.

*N. planifolia*, Hedw. Sp. Musc. t. 48. f. 1—3, and *macrospora*, Hedw. Crypt. v. 3. t. 23; natives of the South sea islands; with *cladobizans*, Hedw. Sp. Musc. t. 47. f. 1—7, and *seductrix*, f. 8—13; discovered by the Rev. Dr. Muhlenberg, near Lancaster, in Pennsylvania; are the only remaining species of this section described with two-ranked *leaves*, which character however their figures hardly express, nor do we find it in our specimens, at least of the latter.

Those of this second section with leaves imbricated in every direction, are only two in Hedwig, both of British growth.

*N. curtipendula*. Pendulous Neckera. Hedw. Sp. Musc. 209. Ehrh. Crypt. 76. Engl. Bot. t. 1444. (*Hypnum curtipendulum*; Linn. Sp. Pl. 1594. *H. dentatum curtipendulum*, viticulis rigidis; Dill. Musc. 333. t. 43. f. 69.)—Stem branched, diffuse. Leaves ovato-lanceolate, pointed, even, spreading. Capsules on longish stalks, drooping.—Native of rocks and trees, in various parts of Europe, but not common in England. Mr. Menzies gathered it on the west coast of North America. The *stems* are long, and either prostrate or pendulous, their principal divisions pinnate with numerous short tapering *branches*. *Leaves* imbricated, spreading every way, of a yellowish shining green, ovate, pointed, single-ribbed, slightly concave, without any transverse plaits. *Sheaths* long and taper, but not half the length of the full-grown fruit-stalk. *Capsule* ovate, drooping; finally erect.

*N. viticulosa*. Cylindrical Neckera. Hedw. Sp. Musc. 209. t. 48. f. 4, 5. Ehrh. Crypt. 185. (*Hypnum viticulolum*; Linn. Sp. Pl. 1592. Engl. Bot. t. 265. *H. subhirsutum*, viticulis gracilibus erectis, capsulis teretibus; Dill. Musc.



Musc. 307. t. 39. f. 43.)—Stem creeping. Branches erect, cylindrical. Leaves lanceolate, imbricated, spreading, slightly turned to one side. Capsules erect.—Found about the roots of trees, in old dry woods, throughout Europe, bearing fruit plentifully enough in the spring. The wiry creeping stems throw up numerous, erect, crowded, level-topped, simple or divided branches, thickly clothed with dark-green or yellowish leaves, which though imbricated every way, are curved toward one side. Fruit-stalks an inch or more in length, from very short sheaths. Capsule erect, cylindrical.

Three new species have been added to this genus by Mr. W. Hooker, in his paper on the Mosses found by Dr. Buchanan in Nepal. These are

*N. spharocarpa*. Hooker Tr. of Linn. Soc. v. 9. 312. t. 27. f. 1.—Stem pinnate, with short branches. Leaves ovate, pointed, single-ribbed at the base. Capsules nearly sessile, almost globular, turned one way.—On trees at Kargoo in Nepal, bearing fruit in March. Nearly akin to *N. heteromalla*, next to which it ought to be inserted; but the more lax and spreading habit, and especially the spherical capsule, unlike every other known *Neckera*, distinguish it.

*N. flavesceus*. *ibid.* 314. t. 27. f. 2.—Stem erect, pinnate. Branches mostly simple. Leaves ovate, ribless. Capsule cylindrical, erect. Lid awl-shaped.—Gathered at Narain hetty. This forms silky tufts of a tawny yellow. It belongs to the last section of the genus, along with *curtipendula* and *viticulosa*; but differs widely from both in its fine, crowded branches; from the former in its long capillary fruit-stalks; from the latter in its still more slender capsules, and leaves not turned to one side.

*N. tenuis*. *ibid.* 315. t. 27. f. 3.—Stem doubly pinnate. Leaves imbricated, ferrated; those of the stem roundish-heart-shaped, with two furrows at the base. Capsule erect. Lid incurved.—Gathered at Narain hetty in January. This belongs to the same division as the last, with which it agrees in colour, but its habit, and growth in broad dense silky tufts, is like some of the feathery species of *Hypnum*. Besides the marks indicated in the specific character, the long dark capillary fruit-stalks, and turgid capsules, are peculiar. *S.*

NECKERHAUSEN, in *Geography*, a town of the duchy of Baden; five miles E. of Manheim.

NECKHAM, ALEXANDER, in *Biography*, an English abbot, who flourished in the thirteenth century, was born at St. Alban's in Hertfordshire. He had imbibed a very early inclination for acquiring knowledge, and that he might indulge it, he embraced the religious life among the canons regular of the order of St. Augustine. He prosecuted his studies with great eagerness not only in his native country, but on the continent, and directed his mind to all the various branches of learning and science then known. He became, in the estimation of the age in which he lived, an excellent divine, an able philosopher, an accomplished orator, and an elegant poet. In 1215 he was elected abbot of the monastery of Cirencester, where he died three years afterwards. He was author of "Commentaries" on Ecclesiastes, the Song of Songs, the Psalms, and the creed of Athanasius, and of other theological and moral pieces; of which a list is given in Lelandi Comment. de Scrip. Brit.

NECKIB-el-esheraf, in Egypt, the head of the shérif, or relations of Mahomet, who has the great cognizance of their actions, and the power of inflicting punishments upon them.

In Arabia, Neckib denotes an officer of inferior descent, some of whom had been slaves in their youth. This title is the highest which Imam can confer; and it differs from that of Scheich, which is a title that can only come by de-

scend, and is peculiar to sovereign princes and independent lords.

NECKLACE SNAKE. See SNAKE.

NECROLOGY, NECROLOGIUM, formed of νεκρός, *dead*, and λόγος, *discourse*, or *enumeration*, a book anciently kept in churches and monasteries; in which were registered the benefactors to the fame, the time of their deaths, and the days of their commemoration; as also the deaths of the priors, abbots, religious, canons, &c.

This was otherwise called *calendar* and *obituary*.

NECROMANCY, formed from νεκρός, *dead*, and μαντεία, *incantment* or *divination*, the art or act of communicating with devils, and doing surprising feats by their assistance; particularly of calling up the dead, and extorting answers from them. See MAGIC.

NECROSIS, in *Medicine*, from νεκρός, *dead*, is properly synonymous with the term *mortification*; but it has been applied by Sauvages, and some other writers, to that disease which has been called *dry gangrene*, *mal des ardens*, St. Anthony's fire, &c.; namely, the *ignis sacer* of Lucretius and the ancients, and the *ergot*, &c. of the moderns. This disease, which terminated in the mortification and dropping off of the limbs, after they had been converted into a dry and mummy-like state, originated from starvation, but has been supposed to arise from poisonous vegetables taken with the food, and not from its deficiency.

Sauvages makes three species of necrosis, which are varieties of the same affection; viz. 1. Necrosis *usilaginea*, the *ergot*, as described by the French academicians; 2. *N. à vine*, the "gangrene sèche" of Quesnay; and, 3. *N. febrilis*, which appears to have been the endemic described by the professors of Marpurg, and other German writers, under the appellation of *Kriebel Krankheit*. See Sauvages, Nosol. Method. Clafs x. Gen. 39. See also *ERGOT*, *IGNIS SACER*, *KRIEBEL Krankheit*, and *RAPHANIA*.

NECROSIS denotes, in *Surgery*, the death, or mortification of a part, or the whole of a bone. The term is derived from the Greek verb νεκρῶν, *to destroy*.

Were any rude and uninstructed person to take a hasty view of the bones of the human body, he might easily fall into the error of fancying them to be a mere mass of stony, unorganised, lifeless matter; while to others, who have attentively studied the first formation of these parts, their increase, their decrease, and their states both in health and disease, it is a most certain and manifest truth, that the bones, as well as the soft parts, are endued with vitality.

In the earliest period of their growth, as the celebrated Weidmann takes occasion to observe, we may admire the principle of life, by which their first rudiments are begun, and what now exhibits the appearance of a soft gelatinous kind of matter gradually changes into cartilages and membranes, in the middle of which the slender specks of ossification arise, and increasing in length, breadth, and thickness, at last acquire, in an inexplicable manner, a fixed and durable external form and internal structure.

In their cavities, interstices, canals, cells, &c. there are various fluids, contained in proper vessels and receptacles; either blood, lymph, or marrow. These are not liable to putrefy from being stagnant, but undergo a continual renovation, being spots derived from the common mass of the circulation, and afterwards carried back into it again.

But what must still more excite our admiration of nature, is the fact, that even those earthy elements, which give strength and compactness to the bones, do not last without any mutation, but have a particular circulation of their own, and whenever a part of the earthy matter is lost, from causes



not necessary for us to particularise here, it is well known to admit of regeneration.

The bones, being then endued with vitality, must be liable to be acted upon by a variety of stimulating causes, and to become affected with inflammation.

Should the exciting cause of the inflammation continue to operate, the soft parts also inflame and suppurate.

When the inflammation and suppuration are confined to the surface of the bone, the periosteum being detached, without, however, any deeper injury of the structure of the bone, or the inflammation extending far internally, writers term the disease *exulceratio ossis*, which differs from *denudation*, inasmuch as the latter is caused by external violence, while the former always arises from preceding inflammation.

When the inflammation affects the bone more deeply, and excavations are formed in it, in consequence of its elementary parts having been absorbed, the disorder is named by Latin writers *caries*, by the Greeks *τερεδω*, and by the Germans *beinfraß*. If we examine the different notions entertained by surgical authors concerning caries, we shall find that they are little consistent either with each other, or the affection to which they relate. As Weidmann observes, Sauvages has confounded caries with necrosis; while Linnæus has set down, as the marks of a caries, some which occasionally attend ulcers, without any such disease of the bone, and do not invariably exist when caries prevails. Vogel and Sagar have, indeed, rightly expressed the disorder; but what they have stated is rendered somewhat obscure by the addition of several superfluous insignificant circumstances to their definitions.

Weidmann contends, however, that these writers need not have had any difficulty in defining caries, since the celebrated Cullen conveyed a just idea of what this disease was, by two words, *ossis ulcus*.

It deserves attention, also, that ulcers of the bones chiefly differ from those which affect the soft parts, in being much slower in their formation and termination, the vital powers of the bones being very inferior to those which are possessed by the generality of other parts of the body.

Just in the same manner as the bones, like the soft parts, are liable to inflammation and suppuration, so, like the flesh, they may be attacked with gangrene and sphacelus; but, in this instance, the case is not usually expressed by these terms, surgeons having agreed to call the disease *necrosis*.

Necrosis of the bones was a disease which did not escape the observation of the ancient medical writers. (Hippocrat. Aph. sect. vii. 77. Celsus, lib. iii. cap. 2, &c.) Many of them, however, were accustomed to confound necrosis indiscriminately with several other analogous affections, so that the consequence is, great confusion prevails in their details of the subject, truth and error being often found bled together in their statements. Some of these old writers sometimes employed the term *caries*, while others used the appellations *spina ventosa*, *cancer ossis*, &c. synonymously with mortification of the bones.

As Weidmann remarks, however, it ought to be understood, that *caries*, *spina ventosa*, and *pædarthrocace*, are all ulcers of the bones, differing merely in their nature and situation. *Caries*, according to this author, is a simple ulcer affecting the outer part of a bone; *spina ventosa* is a worse species of the same disorder, affecting the interior texture of the bones, and occurring with particular frequency in the joints of children: by Marcus Aurelius Severinus it is called *pædarthrocace*. These ulcerative diseases of the bones differ from necrosis, in the same respects as an ulcer of the soft parts differs from gangrene and sphacelus. In

caries, the organisation and nutrition of the bone are only injured, a part of its composition being removed, yet its vitality continuing. On the contrary, in necrosis there is always a portion of bone deprived of nutrition and life, and which portion, since it can no longer be supported like the living part, must necessarily be detached.

The celebrated M. Louis, secretary of the Royal Academy of Surgery at Paris, first applied the term necrosis to the disorder of which we are speaking. He differs from Weidmann, however, in signifying by this expression the death of the whole thickness of a bone, whereas this last writer, in common with all surgeons of the present day, admits different degrees of the affection, from the death of a whole bone to that of a few bony lamellæ, and uses the word necrosis to express the disease in all its states.

There have been some writers, amongst whom is the eminent M. David, who have implied by necrosis a disease, in which a part of a bone perishes, and is then reproduced. (See David's *Obs. sur une Maladie connue sous le Nom de Necrose*, Paris, 1782.) But since it does not constantly follow, when part of a bone dies and is separated, that new bone is formed, and since, in both these circumstances, the disease only differs in its form and degree, and not in its nature, it is manifest that the signification of necrosis should not be so limited. We must coincide with Weidmann in the propriety of calling every case a true necrosis, whenever a fragment of bone perishes, and is detached, or about to be detached, from the other part, which continues alive. *De Necrosi Ossium*, p. 7.

In every climate, age, sex, mode of life, habit, and condition, necrosis may occur; but it is observed that youth, the middle age, and persons who follow laborious employments, and are exposed to external injuries, are most subject to the disease. None of the bones of the human body are altogether exempt from the danger of its attack; yet it is remarked, that the malady most frequently affects those which are situated superficially and towards the extreme part of the limb, while such as lie more deeply hidden are less apt to be the seat of the disorder. The spongy portions of the bones are seldom affected; the disease is more commonly seen prevailing in the hard compact texture of these parts: and it may take place either in the long bones, or such as are broad and flat; in those which are large, or in the smaller ones; or even in the very least, the ossicula of the ear having been known to perish and be discharged. Astruc de *Morbis Veneris*, lib. iv. cap. 1. Henry, *Journal de Med. tom. xv. p. 363*.

Besides the difference, in regard to the bones which are exposed to necrosis, the disease itself is attended with variety. Sometimes only a small slender portion of bone dies; sometimes the piece is large and of considerable thickness. The disease is simple, when it is simple and only in one bone, and the patient is well in all other respects. The complaint puts on a more complicated form, when several parts of the same bone are affected with necrosis, when different bones are diseased together, or when the health in general is impaired, or other complaints exist. The forms, in which necrosis presents itself, vary according as the disease happens to occur in the external or the internal layers of the bones; in their extremities, or their central parts. The dead piece may merely consist of a small slender scale; or it may be of considerable thickness, and even comprehend the whole parietes of the bone. Sometimes the portion affected with necrosis lies between the parietes. In certain cases, a whole epiphysis perishes, or, what is exceedingly rare, the diaphysis of the flat bones. In particular instances, the cylindrical parts of the



## NECROSIS.

long bones are attacked with necrosis in such a manner, that the external lamellæ, which are covered by the periosteum, are preserved, whilst the internal part dies, and is detached from the middle of the parietes of the bone. Sometimes several bones, contiguous to each other, are destroyed and separated at the same time. Nor is it unworthy of notice, that the ravages of necrosis may spread over the bones in every possible direction, longitudinally, transversely, internally, &c.

In order also to have proper ideas respecting the treatment of this disease, it ought to be known, that necrosis admits of being divided into different stages; in the first, the injured part of the bone dies; in the second it is dead, and the process of separation is taking place; and, in the third, the separation is completed.

The various forms of necrosis having been noticed, the next thing for us to consider is the causes of this disorder. These, indeed, are not altogether different from such as produce ulcers and gangrene in the soft parts. As, however, the vital power of the bones is less than that of the flesh, it is probable that necrosis may be brought on by slighter causes than those which induce the preceding affections of the soft parts; and it seems likely, that such causes as would only give rise to suppuration of the flesh, may produce necrosis of the bones.

We may consider, as the cause of necrosis, whatever extinguishes the nutrition of a bone, in the periosteum, the medullary membrane, or the texture of the bone itself, so as to annihilate all the vitality of the part affected. But it merits attention, that if such causes should only extend their action to a certain small part either of the periosteum, the medullary structure, or the bone itself, the bone does not suffer necrosis, but merely suppurates.

The causes of necrosis may either be of an external or internal nature, or both. Sometimes the vitality of the bones is suddenly destroyed by them, while, in other examples, the bone undergoes the process of inflammation before it perishes. The outward causes, producing necrosis, are wounds, contusions, pressure, fractures, comminuted injuries of the bones, luxations, acrid caustic applications, fire, cold, &c. If the external part of a bone be affected by them, the necrosis is external; internal, when they extend their operation to the interior of the part.

When the periosteum has been injured by external violence, so that it becomes affected with considerable inflammation, and sloughs, or when it has been more hastily killed by the action of caustic, fire, cold, or other causes, such vessels as give nourishment to the bone are hurt and destroyed, so that it must inevitably follow, that the portion of bone, which is deprived of the periosteum, must die. But when the separated piece of the periosteum, and the exposed portion of bone, are of trivial size; the patient young, and in other respects healthy; proper antiphlogistic treatment been pursued; and the vessels ramifying within the texture of the bone preserved; hope may be entertained that granulations will arise from the surface of the bone, and an union to the adjoining flesh be established.

The larger the portion of periosteum is which is destroyed, while the bone itself has been bruised, and long exposed to the air, the greater chance is there of a necrosis taking place. The reason to be apprehensive of such mischief is still stronger, when the patient is advanced in years, his vital powers on the decline, or his constitution bad.

The layer of bone that dies and separates may either be small, or of some thickness; or the whole paries of the bone may die; according as the portion of the periosteum, torn away or destroyed by the inflammation, happens to be

small or extensive; according to the degree of injury sustained by the interior structure of the bone; and according as the treatment has been rightly or injudiciously conducted.

Although internal necroses, extending into the spongy parts of the bones, mostly originate from constitutional causes, yet such disease may sometimes proceed from injury of the internal membranes of the bones, occasioned by outward violence. In external injuries of the skull, where the pericranium is detached, or otherwise spoiled, and the external table and diploe have been hurt, the inflammation often spreads to the internal table, from which the dura mater separates. Upon the latter membrane matter accumulates, and the symptoms are of a most dangerous description: if the patient survive without being trephined, a part of both tables of the skull exfoliates. (See Pott's Chirurgical Works, vol. i. p. 32. edit. 1779.) The same thing, says Weidmann, may take place in other bones besides the cranium, and he refers us for proof of the assertion to a case recorded by Bromfield, where the spongy texture of the upper and internal part of the head of the tibia became affected with necrosis, in consequence of violent pressure having been made on an issue in that situation. *Chirurg. Cases and Obs.* vol. ii. p. 9.

*"Neque est quod miremur; ex eo enim, quod vasa, quæ ex periosteio magna copia intra ipsum ossis contextum descendunt, et in medullas disperguntur, et reciproci frequenter anastomosisbus junguntur, primum est colligere, inflammationes, quæ ab initio morbi in extimis, tantum ossium faciebus inflagrescunt, per vasa illa, veluti totidem conductoribus, profundius inglescere, sicque longe et late strages suas exserere posse."* Weidmann, p. 10.

Another more formidable train of causes which may be productive of necrosis, are of a constitutional nature, and they affect the bones either in a sudden or gradual manner.

According to Weidmann, it is proved by frequent observations, that the vitality of the bones may be destroyed by the effects of acute malignant fevers, exanthemata, small-pox, and measles.

When the habit is scrofulous, or affected with lues venerea, or scurvy, writers also inform us that a necrosis may more readily occur.

It is remarked, that quicksilver, which, when judiciously employed, is capable of preventing necrosis in venereal cases, may become a cause of such mischief, particularly in the lower jaw, if too much of the ointment has been rubbed in, or the frictions have been made without sufficient intervals, or the patient has exposed himself to the cold, lived improperly, &c. See *Mémoires de l'Acad. de Chirurgie*, tom. v. p. 356.

In treating of the causes of necrosis, Weidmann, with much judgment, cautions us not to employ such applications as were in vogue amongst the ancient surgeons, who were ignorant of the nature of the bones, and the distinctions of the diseases to which these parts are liable. Remedies of the same kind, says he, have been too much resorted to in modern times, and portions of bone have been not unfrequently destroyed, in consequence of spirituous, acrid, caustic applications having been made to injuries of the bones, or even cutting instruments had recourse to, while the remedies ought to have been of the least irritating kind, and things left principally to the operation of nature. Many surgeons are afraid of applying to an exposed and injured bone emollient ointments; and yet, for what reason is difficult of determination, they have no hesitation in putting upon the part acrid, drying, spirituous dressings. But, continues Weidmann, I have learned from certain and repeated experience, that emollient ointments may be advantageously applied



applied to an uncovered or injured bone. Why, says he, should that kind of dressing which is known to be beneficial to the soft parts be hurtful to the bones? Indeed this writer argues with much truth, that, as the vessels which nourish the bones are less numerous and smaller than those with which the soft parts in general are furnished, irritating, drying, spirituous applications must be likely to produce more extensive mischief in the former than the latter parts. Weidmann, therefore, enjoins us never to make such applications to exposed portions of bone, lest necrosis should be occasioned by the mode of treatment: he is strongly in favour of using emollient dressings.

It has been a prevailing opinion amongst practitioners, that pus, collected in the vicinity of a bone, may by stagnation acquire irritating properties, so as at length to erode the bone, and cause necrosis. This being the doctrine, the common advice has been to make an opening into all such abscesses without delay. Weidmann, however, and the generality of the best informed surgical writers of the present day, do not admit the accuracy of these tenets. It appears to Weidmann, that erroneous ideas on this subject have been induced by the circumstance of the bones in the neighbourhood of abscesses being frequently found bare, carious, or affected with necrosis. The inference here drawn is, that the collected purulent matter has occasioned an erosion of the bone. The truth is, however, that the inflammation which has excited suppuration has not been confined to the soft parts, but has also extended both to the periosteum and bone. Weidmann asks, whether any abscess ever really contained pus of so acrid and eroding a nature, as to be capable of destroying living parts? He observes, that if you take a drop of purulent matter, and instil it into the eye, an organ of exquisite sensibility, you will feel no irritation nor inconvenience. When pus is situated in the anterior chamber of the eye, in contact with the iris and inner surface of the cornea, do we find that it erodes the parts? "*Multoties alii et egomet vidimus, illud hic diu morari neque tamen tenellas has partes corrodere, tandemque et sensum resorbunt, disparere, quia detrimentum his partibus illatum sit. Vidimus ego et dilecti mecum discipuli, inter quos fratres Josephum et Carolum Wenzell, nunc medicinarum doctores nominasse sufficiat, in ulceribus, nudas, et periosteum suo orbis, ossium superficies pure continuo, et per longum fatis tempus allui, ipsum vero os, applicato interim unguento digestivo molliissimo, illo illæsum perstitisse, neque fuisse impedimento, quominus superficies, illa nova carne, tandemque cicatrice obduceretur; video insuper emortua ossa per annos puri intra ulcerum cava exposita, lævam suam superficiem retinuisse, nullamque arrosionis notam; quod cum in osse emortuo ita eveniret, multo adhuc minus in vivo fieri posse certum est.*" Weidmann, *De Necrosi Ossium*, p. 12.

But although Weidmann avers his entire dissent from the doctrine, that pus even erodes the periosteum and bones, he admits, that this fluid, collected in a certain quantity, may, by the pressure which it occasions, produce inflammation and absorption of the adjoining parts. He also distinctly allows, that purulent matter, when collected between a bone and the periosteum, may, by the distention which it causes, destroy the vessels which connect that membrane with the bone, and thus, according to circumstances, give rise either to caries or necrosis.

The inflammation which the causes of necrosis excite in a bone, is either chronic or acute; chronic, inasmuch as it manifests itself slowly, increases in the same way, changes from one state to another with equal tardiness, and, on account of the mildness of the symptoms, is apt to deceive the

practitioner. Such inflammation is particularly disposed to occur in languid constitutions, in which a tendency to acute inflammatory diseases does not prevail; in which the affection originates from a chronic cause, as scrofula, lues venerea, the scurvy, &c. and in which only the superficial part of a bone is attacked. But when the inflammation affects the interior of a bone, and the patient is of a robust, irritable, and plethoric temperament, the symptoms are of the most acute description, intolerable pain, acute fever, loss of rest, delirium, and other nervous disorder. Chronic inflammation produces less suffering, but it is longer in forming: while that which is acute occasions excessive pain, and more quickly arrives at its termination.

The part in which necrosis is taking place swells, and the tumour, like the inflammation of which we have just now been speaking, most frequently arises slowly, though sometimes it increases with great rapidity. In the first circumstance, the pain is obscure and trivial; in the last, it is severe and vehement. The tumour is not conical, as that of a simple abscess, but wide and diffused. Hence its boundaries cannot readily be distinguished, particularly when the affected bone is covered with much flesh. The swelling is so extensive, that the whole region of the bone, or the entire member, may become enlarged.

From the very beginning the swelling augments, and continues to do so until pus is formed; but at length the matter makes its way outward, and, by its discharge, the tumour somewhat subsides. Another sort of tumefaction, of the œdematous kind, is also apt to occur in such patients as have long laboured under the disease, and whose constitutions have been impaired by the violence of the pain, and the tediousness and large quantity of the discharge.

When acute inflammation has prevailed, pus of a good quality soon collects round the dead portion of bone; but when the inflammation has been of a chronic species, the matter is not produced so quickly, and is crude and thin.

An abscess around a necrosis, originating from intense inflammation, and situated near the skin, soon bursts; but if the diseased bone be covered with much flesh, or thick tendinous expansions, and the inflammation be of a chronic kind, the pus daily increases in quantity and occasions distention and pressure in every direction. The bones, tendons, muscles, and vessels resist the effects of the disease a considerable time; but the cellular membrane cannot do this equally well. Hence large and various sinuses take place; some of them extending in the cellular membrane near the main cavity of the abscess; others sometimes being in quite a different situation, especially when the matter is confined under any tendinous expansion. In this last circumstance, the inner surface of the abscess daily increases in a surprising degree, the source of suppuration is extended, and considerable obstacles to the cure are produced.

After matter has continued for some time to be abundantly discharged from the openings, by which such abscesses burst, the sores become fistulous, being surrounded with callous margins, emitting fungous granulations, and having no disposition to heal. The impediment to cicatrization here entirely depends upon the dead portion of bone, whether loose or adherent, which acts like any other extraneous body, and hinders the bottom of the ulcers from healing.

The number of these fistulæ is different in different cases; the less serious the disease is the fewer of them generally occur; while, in more considerable cases, there are many of such apertures, which may be very near together, or at a considerable distance from one another. When the whole circumference of a bone is affected with necrosis, fistulæ may



be formed in the integuments on every side of the limb; though it occasionally happens that one particular side is quite free from them.

There is no necessity for any comment here upon the urgent necessity of paying close attention to all the circumstances on which the diagnosis of the present disease is founded; the maxim of Celsus should never be out of recollection; "*Cujus certa notitia non est, ejus certum reperire remedium non potest.*"

There is something in the sort of inflammation with which the disease commences, that might excite suspicions of the approaching occurrence of necrosis. The inflammation is slow in its progress, deeply seated, lasts a long while, and is accompanied with grievous symptoms; the colour of the skin remains a long while unchanged; but at last it assumes a reddish purple, or leaden hue; the pus, after a time, makes its way to the surface, and, on its being discharged, the inflammatory symptoms and the disease undergo some remission. When the inflammation is acute, the pain continues to be severe a long while.

It is another sign of necrosis, when the swelling accompanying the inflammation seems to comprehend the bone itself, is extensively diffused, and not particularly prominent, and when the matter, after it is formed, lies deeply, and can only be obscurely felt.

The ulcers which occur over a necrosis emit a large quantity of matter; their edges are shelving; and granulations arise which are yellowish, or intensely red, irregular, and generally insensible, though sometimes excessively painful, and, on being touched, readily bleed.

An old opinion prevails amongst some practitioners, that the matter of sores, in which there is a dead piece of bone, is always thin, fetid, and sanious, and such qualities of the discharge have been regarded as a proof of the bone being affected. Weidmann, however, enjoins us not to put any confidence in this criterion. He assures us he has learned, from frequent observation, that ulcers, accompanying necrosis, often secrete white, thick, inodorous matter, while other sores, unattended with any disease of the bone, have a thin fetid discharge. Weidmann does not mean to deny, that when the bone is affected with necrosis, the accompanying sores never emit unhealthy matter; and his chief intention seems to be, that of asserting that the circumstance is far from being sufficiently constant to serve as a criterion of the disease of the bone.

Nor is it any certain mark of a diseased bone when the dressings, with which the ulcers have been covered, turn black; for this occurrence often takes place when a necrosis does not exist, and is absent when a portion of bone is known to be dead.

From circumstances like the preceding, no certain information can be drawn, in respect to the diagnosis. Much may be learned, however, from manual examination, if the bone be not too deeply concealed, the fistulæ not very winding, and the sores not entirely filled up with fungous granulations.

When the ulcers are large and open, the finger should be carefully introduced, and by this means the dead part of the bone will be felt and ascertained to be bare, and deprived of its periosteum. That the bone is actually dead, will be a matter of greater certainty, if its surface should be rough as well as bare, for there is always a chance of a bone becoming covered with granulations, even though the periosteum may be detached.

Examinations made with the naked finger always give the surest information, and consequently ought to be pre-

ferred. The ulcers, however, are frequently so narrow, that the finger cannot be easily introduced, in which circumstance a common silver probe must be employed. This should be passed down to the bone, and moved about in all directions, in order to ascertain how much of the periosteum is detached, whether the surface of the bone is rough, and whether the dead portion is loose, or likely to become so quickly, &c.

Sometimes the dead piece of bone projects out of the ulcer, or, on opening the sore, may be distinctly seen. When the visible bone is of a black colour, it is unquestionably dead; but when its appearance is whiter than natural, it is more difficult to form a judgment.

It is worthy of notice, that the blackness of a bone does not depend upon the necrosis itself, but upon the exposure of the part to the air, and the drying up of the pus. It is even said, that portions of bone which are exfoliating are whiter than natural, provided they have always been covered with fluid purulent matter, and defended from the air.

In order to distinguish caries from necrosis, it ought to be understood, that the former disease, for the most part, arises in the spongy parts of the bones, and from an internal cause, in young subjects of debilitated and bad constitutions, the discharge being fetid, copious, thin, and sanious. If the bone itself be touched with a probe, it does not feel dry, as in necrosis, but excavated by ulceration, and, as it were, worm-eaten.

It is a remarkable circumstance in the history of necrosis, that in favourable instances of the disease, the inflexibility and firmness of the limb are preserved during the whole of the process, by which the new bone is formed. Consequently, the new bone must have begun to grow, and must have acquired firmness before the old bone separates, or is absorbed. Were this not the case, the limb must become flexible and useless the moment the dead bone is removed. Another consequence of the new bone being formed before the removal of the old one, is, that the former must surround and include the latter. For, since the lifeless portion of bone completely occupies the space between the two living ends, these cannot be immediately connected by the new bony matter. The connection can alone be completed by the new bone being deposited on the outside of the old one, from one end to the other, and attaching itself to the portions which still remain alive. The new bone must also be necessarily larger than the old one, because externally situated, and hence the affected limb, after the cure is complete, will always continue larger, clumsier, and less shapely than the other. The length of it, however, remains unaltered, because the old bone retains its attachments, while the rudiments of the new bone are lying on its outside, and connect the living ends of the old one by an inflexible mass, equal in length to the portion which is destroyed.

Thus we see, that in the process which nature follows in the formation of the new osseous shell, the old bone serves as a mould for the new one; and the first step of the process is to surround the old bone with an effusion of coagulating lymph. Russell on Necrosis, p. 2—7.

This author adduces many arguments to prove, that the pulpy mass, which extends from one portion of the bone to the other, and is itself at last converted into bone, is formed quite independently of the original bone, or the periosteum. P. 27.

On the other hand, Mr. Crowther has published a letter, written by Mr. Macartney, in which the periosteum is described as being the organ producing the new bony matter. Mr. Macartney remarks, "that the first and most important



## NECROSIS.

ant circumstance is the change which takes place in the organisation of the periosteum; this membrane acquires the highest degree of vascularity, becomes considerably thickened, soft, spongy, and loosely adherent to the bone. The cellular substance, also, which is immediately connected with the periosteum, suffers a similar alteration: it puts on the appearance of being inflamed, its vessels enlarge, lymph is shed into its interstices, and it becomes consolidated with the periosteum. These changes are preparatory to the absorption of the old bone, and the secretion of new osseous matter, and even previous to the death of the bone which is to be removed. In one instance, I found the periosteum vascular and pulpy, when the only affection was a small abscess of the medulla, the bone still retaining its connection with the neighbouring parts, as it readily received injection. The newly organised periosteum, &c. separates entirely from the bone, after which it begins to remove the latter by absorption; and, while this is going on, its inner surface becomes covered with little eminences, resembling granulations. "In proportion as the old bone is removed, new osseous matter is dispersed in the substance of the granulations, whilst they continue to grow upon the old bone, until the whole, or a part of it, is completely absorbed, according to the circumstances of the case. What remains of the investment, after the absorption of the old bone, and the formation of the osseous tube which is to replace it, degenerates, loses its vascularity, and appears like a lacerated membrane. I have never had an opportunity of examining a limb a sufficient time after the termination of the disease, to ascertain whether the investment be at last totally absorbed, but, in some instances, I have seen very little remaining. During the progress of the disease, the thickened cellular substance which surrounded the original periosteum becomes gradually thinner; its vessels diminish, and it adheres strictly to the new formed bone, to which it ultimately serves as a periosteum." Mr. Macartney states, that the anatomical preparations which authenticate the above observations, are preserved at St. Bartholomew's Hospital. See Crowther on White Swelling, p. 183, edit. 2.

According to Mr. Russell, an incipient case of necrosis is characterised by a deep-seated excruciating pain, not at first aggravated by pressure, and which is soon followed by a rapid enlargement of the parts along the course of the bone. Soon, however, after the commencement of the attack, an external inflammation succeeds, which quickly ends in the formation of matter. The abscess at length bursts by a small opening. The extent of this inflammation is not in general great. Most commonly several inflammations of a circumscribed kind occur about the same time the abscesses burst by small openings, which do not close, but continue discharging matter as fistulous sores. The apertures are generally situated over the most superficial part of the affected bone. The pus is usually of good quality, and large in quantity, issuing from extensive cavities, into which the fistulæ lead. Such abscesses, being situated within the newly formed osseous shell, cannot be discharged by pressure, nor can any fluctuation be felt. A probe can seldom be introduced far into the fistulous openings, or discover any loose piece of bone. In this stage, the dead bone, technically called the *sequestrum*, can seldom be felt; though, in a few instances, small spiculæ make their way outward, together with the discharge. Fistulous openings may be regarded as necessarily attendant on all cases of necrosis; though so mild a case may be conceived, that the new bone may be generated without any outward ulcerations. No such instance, however, is on record. Russell.

After the openings have formed, the case may take one of the following courses. The ulcerations may in time heal up, the sequestrum never be seen, and no vestige of the disease remain, except a permanent enlargement and induration along the course of the bone. This is the most favourable manner in which a necrosis may terminate. In the other one, the sequestrum makes its appearance externally, through the new bone and the integuments, attended with different degrees of pain, inflammation and suppuration, in different cases. The sequestrum may at first be moved by shaking it; but is too firmly wedged in the surrounding parts to be completely taken out. In time, however, it becomes loose enough to be removed.

Sometimes the middle portion of the sequestrum presents itself externally, while its sides are every where wedged in the substance of the new bone. The natural end of such a case would be very tedious of accomplishment, and the interference of art is essentially serviceable in accelerating the separation of the dead bone, thus circumstanced. After the sequestrum has been either absorbed or thrown off, in one of the above ways, the cavity of the new bone becomes filled up with granulations, which are, at length, converted into bony matter. Thus the new bone differs from the original one, in being solid instead of hollow. Russell.

When the sequestrum is thrown off slowly, the inflammation is moderate; but when it separates quickly, while the new bone is in a soft state, the detachment is always preceded by severe inflammatory symptoms, and followed by a temporary loss of the natural firmness of the limb. This premature separation of the sequestrum often occurs in necrosis of the lower jaw, and the chin consequently falls down on the neck. In certain cases, the sequestrum separates at each end from the living portions of the old bone, before the new osseous shell has acquired firmness, so that the limb feels as if it were broken in two places. Russell.

When the dead bone is removed by absorption, the process is tedious, and attended with a profuse discharge of matter, which gradually ceases, and at last stops altogether. In young subjects, this work is more quickly perfected than in old ones. There are some chronic cases of necrosis, in which the sequestrum remains unabsorbed for an indefinite length of time, producing no violent irritation, yet always enough to tease the patient, and disturb his health.

In necrosis of the long bones, there are always round apertures in the new osseous shell, corresponding with the external fistulous openings, as long as the sequestrum remains enclosed in it. Russell.

The tibia, femur, lower jaw, clavicle, humerus, fibula, radius, and ulna, are most frequently affected with necrosis. Excepting the lower jaw and scapula, the process of regeneration has only been noticed in the cylindrical bones. From twelve to eighteen years of age is the time of life most subject to necrosis. The necrosis of the lower jaw, however, seldom occurs before the age of thirty. In some persons, two bones are affected at once, owing to constitutional causes.

The process of cure is said to take place with more celerity in the lower jaw than any other bone, and may be completed in three months. Mr. Russell has never known a necrosis of the tibia get well in less than a year; but, in general, nearly two years elapse first; sometimes the cure is protracted to a much greater length of time.

When the constitution is predisposed to necrosis, any cause, capable of exciting inflammation, may occasion an attack of it. Often, however, the disease is purely sporadic, and not referrible to outward causes. Cases which occur from



## NECROSIS.

from external injury, are generally those of the lower jaw, which are frequently imputable to blows, the application of acid substances to carious teeth, effects of mercury, &c.

Necrosis of the lower jaw and clavicle never proves fatal: that of the lower extremities, which is the worst case, does so very seldom, and only from the violence of the first inflammatory symptoms, which rapidly bring on a hectic fever, which proves incurable, without removing its local cause by a timely amputation. When the violence of the first stage, however, has abated, the irritation ceases, and the hectic symptoms, if there are any, are generally moderate. Nor is this state of tranquillity disturbed, till the sequestrum, in making its way outward, again produces irritation. At this second period of urgency, extensive inflammation may originate, ulceration spread all over the surface of the limb, assume an unhealthy appearance, violent fever succeed, and the patient either perish, or sink into a state, in which he must consent to amputation as the only means of saving his life. This is the last crisis of imminent danger; but, in general, it is less perilous, than when the inflammation comes on in the incipient stage of necrosis. Russell.

The following case of necrosis of the thigh-bone is related by Dr. Mackenzie.—William Baxter, a boy thirteen years old, received a blow on his thigh at school, of which he at first hardly complained; but in a few months he began to have pain in the thigh, which inflamed, swelled, and appeared to have matter in it. The parents being poor, no surgeon was called, and the boy was allowed to linger for a great while. At length the matter made its way through the skin, by a small opening on the interior part of the thigh, about three inches above the knee, and a thin sanies continued to be discharged for eighteen or twenty months. At length, the hole in the skin enlarged, and the point of a bone began to protrude, and give a good deal of pain when the clothes rubbed against it. After suffering in this manner for two years and a half, the boy, as he lay in bed one morning, felt the bone looser, and projecting more than ordinary. He gave it a strong pull, and brought the piece away entirely, which proved to be seven inches and a half of the thigh-bone. A good deal of bleeding followed; but the wound soon healed, and he has never since found the least inconvenience. Dr. Mackenzie, hearing of this singular case, sent for the boy, carefully examined his thigh, and found it as firm as the other. The only difference was, that it was somewhat thicker, and a little more curved. The muscles retained their natural softness and looseness on the bone. The detached piece of bone was a portion of its whole circumference.

In confirmation of this case, Dr. Hunter mentions a tibia, which was sent to him by a Mr. Inett, after amputation. On examination, the case at first sight seemed to be a swelling of the whole bone, with a loose internal exfoliation. However, it proved to be a remarkable instance of the separation of the greatest part of the original bone, whose place was supplied by a callus. The external surface of the inclosed loose piece of bone was smooth. A small part of the surrounding bony substance being removed, the contained piece was taken out, and found to be the whole body of the tibia. It had separated from the epiphysis at each extremity. The middle part of the bone had perished, consequently had lost its connection with the periosteum, and was gradually thrown off from the living parts of the bone at each end. A callus extended from end to end, united the two extremities of the original tibia, preserved the length, and gave firmness and inflexibility to the part. The exfoliation was so encompassed by the new bony case, that,

though quite loose, it could not be thrown out. (Med. Obs. and Enquiries, vol. ii.) In the fifth volume of the *Mem. de l'Acad. de Chirurgie*, is the history of a man, the whole of whose clavicle came away, without his being deprived of any of the motions of the arm. The death of this patient, which happened shortly afterwards, afforded an opportunity of examining how nature had repaired the loss. Another clavicle was found regenerated, which neither differed from the original one in length or solidity; but only in shape, being flatter, and not so round. It was connected with the acromion and sternum, just like the primitive bone.

Though necrosis mostly attacks the cylindrical bones, the flat ones are not exempt from the disease. Pott makes mention of a parietal bone, the whole of which was detached, and of an os frontis, the greatest part of which came away. In a thesis on necrosis, in 1776. *aux écoles de chirurgie*, may be found the case of a young man, a very large part of whose scapula perished and came away. Chopart, who relates the case, mentions, that he saw the patient quite recovered, and felt a new triangular moveable bone, firmly supporting the clavicle, but smaller and flatter than natural, and without any spinous process. The same has happened to the lower jaw, as may be seen by referring to the *Ephemerides Germanicæ*, and *Mem. de l'Acad. de Chirurgie*. In the fifth volume of the latter work is an account of a woman who applied to be relieved of some venereal complaints. From the beginning of the treatment, the bone was discovered to be loose just under the gums, and seemed shortly afterwards to move backwards and forwards with a tooth. Mr. Guernery took hold of the tooth with a key-instrument, and found it firmly inserted in the moveable piece of the jaw; he made with caution the necessary manœuvres for extracting the portion of bone; but was greatly surprised on finding what an extensive part yielded to his very moderate efforts. It was the whole of the lower jaw, above its right angle, from its division into the coronoid and condyloid processes to the space between the first and second of the front grinders of the left side. On the right, there only remained the condyle in the articular cavity of the temporal bone. This destruction left a considerable empty space, from which great deformity was apprehended, in consequence of the unsupported soft parts falling down. The woman, however, got well in two months, and had the most perfect use of a new jaw. A similar fact is recorded in the *Journal de Medecine*, 1791.

In cases of necrosis, the surgical indications are few and obvious; viz. 1. When inflammation attends any stage of the disease, to have recourse to common antiphlogistic means. 2. To promote the separation, or absorption of the dead bone, according as it tends to make its way outward, or to become completely incased with new bony matter; and, in this situation, to be invisibly and gradually removed by a natural process. 3. When the constitution seems unable to sustain any longer the effects of the local disease, to amputate, if the situation of the affection will permit.

During the first inflammatory attack, the patient's life is often endangered from the extent and violence of the inflammation, before the new shell is formed, or the sequestra loose, and ready to separate. In this state, art can do little more than employ topical bleeding, and fomentations, and poultices. If, notwithstanding such treatment, the patient should seem likely to perish of the hectic symptoms, which rapidly follow, unless the limb be immediately removed, the operation should then not be delayed.

But if the patient get over the first inflammatory stage, the grand object is to get rid of the sequestra. When they, however,



however, are undergoing a gradual absorption, without ever making their appearance externally, or giving any considerable disturbance to the constitution; or when the dead bone is making its way outward, without occasioning urgent inconveniences; the surgeon should interfere very little with the natural progress of the case. When the dead bone does not tend to make its way through the skin; but lies quietly incased in the new osseous shell, the occurrence of extensive suppurations may be prevented, by occasionally applying leeches, and keeping open a blister with the savine cerate, as recommended by Mr. Abernethy in his lectures, and Mr. Crowther, in his work on the White Swelling. The blister will, at the same time, have great effect in promoting the absorption of the sequestrum, and, of course, in accelerating the process of cure.

When the dead bone, however, creates considerable irritation, when its middle portion is very superficial, or quite exposed, while its ends or edges are overlapped by the surrounding new bony matter, consequently the piece so wedged in, that its separation cannot be expected in any moderate time, the operation of cutting it out is, certainly, not only feasible, but highly proper and commendable. In this kind of case, Mr. Hey's saws would be found the most convenient instruments.

Also, were the dead bone, though quite covered and incased in the new one, to be tediously long in being absorbed, productive of great irritation and impairment of the health, and the affected bone superficial, like the tibia, no candid man could condemn making an incision, and removing a part of the osseous shell, in order to take the chance of being able at once to extract the sequestrum lodged in its cavity. Mr. Russell mentions successful attempts of this kind, which fully justify the practice. The state of the bone may be examined, without proceeding to any severe operation, by laying bare small portions of the bone in the vicinity of the fistulous openings, introducing a probe, if possible; or, if that be impracticable, drilling small holes with a perforator, for the purpose of exploring the state of the cavity. If the cavity should still seem extensive, and to contain a sequestrum of considerable size, the necessity of operating is apparent. On the contrary, if the whole cavity be filled up with osseous matter, and no dead bone be found there, the progress of the case must, of course, be left to nature. (Russell.) When the surgeon knows, that his object is to make an opening large enough to allow the dead piece to be extracted, he scarcely needs directions how to set about making it. The skin must be divided with a common scalpel, and the bone cut with small trephines, a gouge and mallet, or, what are in most cases best, Mr. Hey's saws.

Consult Russell on Necrosis, 1794. Mem. de l'Acad. de Chirurgie, tom. v. Boyer on the Diseases of the Bones, vol. i. Encyclopédie Méthodique; Partie Chirurgicale; Art. Necrose. Thesis de Ossium Necrosi, 1776. Crowther on White Swelling, &c. edit. 2. Cooper's Dictionary of Practical Surgery.

Some remarks on necrosis may be found in Richerand's Nosographie Chirurgicale, tom. iii. Levéillé has also been very diffuse upon this subject, in his work, entitled Nouvelle Doctrine Chirurgicale, tom. iv. By far the most instructive book on necrosis, is Weidmann, De Necrosi Ossium, with plates, folio; Francofurti, 1793.

**NECTANDRA**, in *Botany*, so called from *νεκταρ*, *honey*, and *ανδρα*, *a man*, because the supposed nectaries have the appearance of anthers or male organs. Berg. Cap. 131. Juss. 77. This genus is thus characterized by Bergius.

Nectarious scales about eight, (rarely four,) prominent, seated upon the margin of the tube of the funnel-shaped

corolla, and resembling anthers. Stamens included within the tube.

The three species described by him are *Gnidia sericea* and *oppositifolia*, with *Struthiola erecta*, of Linnæus; but Jussieu seems not to admit more than the first, the second, having but four of the nectariferous scales, being, in his estimation, a *Gnidia*; and the third, having but four stamens, a *Struthiola*. The parts in question seem to us too variable, to authorize the establishment of a genus on such a character, for one single species, which has nothing about it besides to support the distinction.

**NECTAR**, *νεκταρ*, among the *Ancient Poets*, the drink of the fabulous deities of the heathens. See **AMBROSIA**.

**NECTAR** is also used, by some of the ancients, to express honey: this signification of the word was owing to the supposition, that honey was the drink of the bees, as they esteemed the yellow matter collected on their thighs to be their food. They called the latter ambrosia. It seems, that the ancients have been more in the right, as to their opinion of the ambrosia, than other authors, who have usually esteemed that yellow substance to be true wax: but it appears from experiments, that it is not really so; nor can wax be separated from it by any of the known processes of chemistry. It seems rather that the bees eat it, agreeably to the opinion of the ancients, and that after having served them as nourishment, it is converted in the bowels into the substance we call wax.

**NECTARINE**, a fruit greatly esteemed for its delicious flavour, and supposed to have its name from the nectar of the gods, in heathen stories.

It differs in nothing from the peach, but in having a smoother skin and a firmer pulp.

We have ten kinds of nectarine cultivated by the curious in gardening; viz. Fairchild's early nectarine, ripening in the end of July; the Ebruge, Newington, scarlet, Brugnon or Stalian, and Roman, which ripen in August; the murrey, golden, and Temple's, which ripen in September; and the Peterborough, or late green nectarine, which ripens about the middle of October.

The insects in nectarines may be destroyed in the same manner as those of peach trees.

The pruning, planting, and whole culture of this plant, are the same with that of the peach.

**NECTARIUM**, in *Botany*, the nectary or honey-cup, so denominated by Linnæus, according to the metaphorical sense in which the word *nectar* is often elegantly applied, by the Latin writers, to honey. This in Linnæan language is restrained to some part of the flower, and is defined an organ which contains, or which secretes, honey. Similar organs are found on the stalks or leaves of several plants, which produce a liquid, differing, in no respect, from what is found in flowers; but such are termed nectariferous glands. They are met with on the footstalks of Passion-flowers. The *Aletris fragrans* of Linnæus (*Dracena fragrans*, Ker in Curt. Mag. t. 1081.) exudes, from various parts of its flower-stalks, without any particular apparatus, a great quantity of very sweet concrete honey. In like manner the tube or claws of the corolla, perhaps even the stamens, in many flowers, appear to produce the copious honey lodged around or within them, without any distinct organ, or even a gland, being, as far as we can discover, appropriated to that purpose. Such is generally the case in the ringent flowers, or class *Didynamia*. Honey indeed is nearly universal in flowers, being designed, in a secondary way, to promote their fecundation, by means of the insects which depend upon it for food, and in searching for it, either brush the pollen from the anthers, upon the stigma



of the same blossom, or convey it from one to another. The more we scrutinize and watch the fecundation of flowers, the more proofs we shall find that even in those which, as usual, have stamens and pistils in the same individual, the former are often more vigorous in one of the same species, even on the same stem, than in another, whose pistil, on the other hand, is more perfect or vigorous than its own stamens. It very often happens also that the anthers of a flower are ripe, not precisely at the same moment with its stigma. In these cases the ministry of insects becomes peculiarly useful. Their operations are among the infinite and rich variety of means, by which similar purposes are accomplished under the superintendence of Divine Wisdom. These force even the most incredulous and fastidious observer, to admit the evidence of a design in Nature. Shall we microscopically admire these, and overlook the infinitely transcending design of the revealed will of God?

The shape and structure of the *nectarium* in different plants are extremely various, but commonly quite constant and uniform in flowers of the same genus; very frequently indeed supplying the most clear and decisive marks, by which one genus is distinguished from another. In the Crown Imperial the nectary is a mere cup or depression, in the Lily a bordered furrow in the claw of each petal; in the Violet the base of one petal is elongated into a spur, or bag, containing the honey; in the Nauturtium, or *Tropæolum*, the nectariferous spur is an elongation of the calyx. The nectary is of the nature and texture of petals in the *Epimedium*, Engl. Bot. t. 438, but perfectly distinct from them, as well as from the calyx; while the Larkspur, Columbine, Aconite, and Hellebore, have likewise nectaries more or less agreeing with their petals, but no calyx. Hence some botanists reckon their petals, though coloured, the calyx, and their nectaries the only corolla. The neighbouring genus *Ranunculus*, whose nectaries are pores in the claws of its petals, certainly gives weight to such a determination. In *Euphorbia* the petals are in some species decided cup-like nectaries, filled with honey, in others of a crescent shape, possibly exuding the same fluid from their upper surface; but this we have in many instances not been able to detect, and there rather appears to be an actual transition in this very natural genus, from petals to nectaries.

Very distinct and certain nectaries, as actually secreting honey, are those of a glandular kind, lodged in the deepest recesses of a flower, and quite of a different substance from its other parts. Such are the green glands, usually four, in the *Tetradynamia*, or Cruciform, class, situated at the base of the stamens, either on the inner or outer side. Similar ones are found in *Geranium* and *Salix*. In the latter genus an abortive germ often seems to become a nectary, which is doubtless a very strange transition. *Urtica* exhibits the same phenomenon, at least according to Linnæus, but we cannot of our own knowledge speak to this.

Some flowers display an elaborate apparatus, which cannot be demonstrated to have any concern in the secreting or holding of the honey. Such are the five green bodies, fringed with bristles, each of which bears a globe, in the elegant *Parnassia*, Engl. Bot. t. 82. These, not being referrible to any other of the usual parts of fructification, all of which are present besides, are by analogy presumed to be nectaries, which it is not possible perhaps either to disprove or to confirm. Linnæus has been much censured for using this compendious term for every such supernumerary part, though it is very convenient for botanical distinctions to do so. The numerous and complex rays which decorate the Passion-flower, are equally inexplicable in their nature. But they crown the cell where the copious honey is lodged,

while their cellular texture and vivid variegation of colour, indicate their connection with air and light, two great probable agents in the secretion of that saccharine fluid; nor does it appear to us at all improbable, that they share in its elaboration. In other cases the richly coloured petals of flowers possibly answer the same end. Professor Sprengel has very ingeniously attempted to demonstrate, that many of these, so peculiarly constructed or coloured, appendages to flowers, have a definite and appropriate use, which is to attract certain insects by their beauty or smell, that such insects may seek for the honey, or else to accommodate them while they are procuring it. Such he considers to be the intention of an infinite variety of gorgeous decorations about many flowers, which he calls *macule indicantes*, or spots that indicate the precise situation of the honey. Perhaps, in the rich benevolence of the Creator, he has indulged this tribe of beings with a taste for the beauty of those objects, thus tempting them to frequent the flowers for an important purpose in the economy of nature. So it seems, he has formed some flowers in the strong likeness of particular butterflies, that the latter may be attracted to deposit their eggs on the plants so adorned, which are requisite for the sustenance of the future brood of caterpillars. See Sm. Insects of Georgia, t. 5, where this hypothesis is strikingly illustrated in *Papilio Eubule* and *Cassia Chamecrisla*; see also *Phalæna Gaura*, t. 99. of the same work.

That Linnæus, or other systematic botanists, may not sometimes have erred, in giving the name of *nectarium*, either to incomplete stamens, or to some fringe or other appendage not strictly such, we will not deny; but who can expect to avoid these occasional inaccuracies? He first named the part in question, and illustrated its use, which is no less extensive in the scientific discrimination of plants, than in the economy of their fructification; and if he was now and then led astray by a favourite hypothesis, he is more excusable than those, who could not see the use of the *nectarium* at all, either in vegetable physiology or systematic botany. S.

**NECTRIS**, a genus of Schreber's, derived from *nectis*, any thing that floats; a name however which might, with equal propriety, be applied to various other aquaticæ. Schreb. 237. Willd. Sp. Pl. v. 2. 248. Mart. Mill. Dict. v. 3. (Cabomba; Aubl. Guian. 321. t. 124. Juss. 46. Lamarck Illustr. t. 265.)—Class and order, *Hexandria Digynia*. Nat. Ord. *Tripetalodeæ*, Linn. *Junci*, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, six-cleft; the three outer segments ovate, acute, coloured on the inside; the three alternate inner ones ovate, obtuse, smaller, coloured on both sides. Cor. none. Stam. Filaments six, capillary, inserted at the base of the segments of the calyx; anthers ovate. Pist. Germens superior, two, oblong; styles short; stigmas obtuse. Peric. Capsules two, ovate, rather fleshy, crowned with the permanent styles, of one cell. Seeds numerous, very small.

Obs. We are somewhat inclined to subscribe to Jussieu's opinion of this plant belonging to his *Ranunculaceæ*, and, in that case, the three inner segments of the calyx must be considered as petals.

Ess. Ch. Calyx six-cleft, the three inner segments smaller and obtuse. Corolla none. Capsules two, rather fleshy, crowned with the styles, of one cell, many-seeded.

1. *N. aquatica*. Linn. Syst. ed. Gmel. v. 2. 580. Willd. (Cabomba aquatica; Aubl. Guian. t. 124.)—Found in pools and gentle rivulets at Guiana, and in the island of Cayenne. Stems long, branched, jointed, fistulous, with a pair of leaves at each joint. Lower leaves immersed, in five, capillary segments, repeatedly three-forked, with taper points,



points, the outline of the whole circular; *upper ones* floating, alternate, peltate, orbicular, undivided, with concentric ribs. *Footstalks* very long. *Flowers* on long solitary stalks, at the axils of the upper leaves, yellow.

NECUIA, a name given by the ancient Greeks to a species of mullein.

The Greeks and Romans both used the stalks of a peculiar kind of mullein, called *thyralis* by Nicander. For the making of wicks of lamps, we have a kind of mullein, called *lychnites*, and candlewick mullein, from the *λυχνιτης*; of Dioscorides; but it is not certain that our's is the same plant.

The ancients used the stalks of many different plants for the wicks of their candles and lamps. The rush, stripped of its bark, was as commonly in use with them as with us for this purpose; and they also used the nettle, this mullein, and many other plants, whose stalks were composed of tough filaments, for the same purpose; beating them out like hemp, and when dry, dipping them in melted resin, and other such inflammable substances. When thus prepared, they are readily inflammable, like our flambeaux, and this mullein, having stalks more long and large, and more firm than all the others, was used to make those lights, with which they set fire to the funeral pile for consuming the ashes of their dead friends.

NECYDALIS, Carrion-Eater, in *Natural History*, a genus of insects of the Coleoptera order. The generic character is this; antennæ setaceous or filiform; four feelers that are filiform; shells less than the wings, and either narrower or shorter than the abdomen; the tail is simple. Of this genus there are 39 species, separated into two divisions, as follows.

A. *Antennæ setaceous; shells shorter than the wings and abdomen.*

#### Species.

\* MAJOR. The shells of this species are ferruginous and immaculate; the antennæ short. It is found in many parts of Europe. The head is black, and the wings are longer than the body.

VARIEGATA. Abdomen black, with fulvous bands. It inhabits New Holland.

\* MINOR. Shells testaceous, with a small white line at the tip; the antennæ are long. This species is found in several parts of Europe.

\* UMBELLATARUM. The shells of this species are testaceous and immaculate; the antennæ are long. This also is an European insect.

B. *Antennæ filiform; shells subulate, as long as the body.*

#### Species.

THALASSINA. The thorax of this species is channelled; the body is green, legs black. It inhabits Germany, and is said to be twice as large as the next, *viz.* the

\* VIRIDISSIMA. In this species the thorax is roundish; the body is green, and the fore-legs testaceous. It inhabits this and other European countries.

\* CÆRULESCENS. The thorax of this is roundish, and the body blue and nearly opaque. It is an European insect.

VIRESCENS. In this species the thorax is unequal; the body is of a dull greenish colour; the antennæ and legs are black. It inhabits Germany, and is less than the *N. thalassina*. The thorax is impressed on each side; the shells have two raised lines; the hind-thighs in one sex are clavate, and in the other simple.

VOL. XXIV.

CYANEA. Thorax ovate; blue; the antennæ and legs are black. It inhabits Germany, and is the same size as the last; the thighs are blue.

SANGUINICOLLIS. The thorax of this is roundish and rufous; the body is brown. It inhabits Saxony.

BARBARA. Thorax uneven, greenish; tip of the shells and legs yellow. It inhabits Barbary. The hind-thighs are black.

SELADONIA. Thorax uneven; body green and polished; the shells are blue and thickened at the tip. It inhabits Germany, and is something less than the *N. virescens*.

RUFICOLLIS. Thorax roundish, and with the abdomen rufous; head and shells brassy-green. It inhabits Italy. The head is green; the antennæ and legs are black.

MELANOCEPHALA. Black; thorax and abdomen fulvous; shells testaceous. It inhabits Italy, and is the size of the last.

TRISTIS. Black; thorax roundish, and with the base of the thighs rufous. It is found in Van Diemen's Land. The shells of this species are very smooth.

ATRA. Shells subulate, black; all the thighs are clavate. It inhabits the southern parts of Europe.

\* HUMERALIS. Shells subulate, black, yellow at the base. This is an English insect. The shells are without lines; body and legs black.

USTULATA. Black; base of the shells and broad future testaceous. It inhabits Germany.

MELANURA. Black; thorax and shells testaceous; the latter tipped with black. This is found on various plants in Spain.

NOTATA. Head and thorax ferruginous; shells testaceous, tipped with black. It inhabits Germany, and is the same size as the last.

FULVICOLLIS. Black; thorax and tail fulvous; shells with a blueish shade. It inhabits Germany, and is less than the *N. melanura*.

\* RUFA. The shells of this species are subulate; the body is black; the thighs are clavate; the shells and antennæ are rufous. This is found here and in other parts of Europe.

PRÆUSTA. Black; shells testaceous, tipped with black; the thighs clavate. It is found in Barbary.

\* CÆRULEA. Shells subulate; body blue; hind-thighs clavate and arched. It is found here and in other parts of Europe; and varies in having the legs sometimes simple.

PODOGRARIA. Shells subulate, testaceous; body black; hind-thighs clavate and testaceous at the base. It is found in gardens in Europe.

FLAVESCENS. Shells testaceous; body black; hind-thighs clavate and curved. It is an European insect, and is thought to be a mere variety of the last.

BICOLOR. Blueish; edge of the thorax, abdomen, and legs testaceous. It inhabits the Cape of Good Hope.

CLAVIPES. Black; shells tapering, greenish; hind-thighs thickened and curved. This is found at Kiel, and is not above half the size of the others. The thorax is impressed on each side black-green; shells with a raised dusky line reaching not half way down.

TESTACEA. Black; thorax and shells testaceous; legs rufous. This species is found in divers parts of Germany.

GLAUCESCENS. Shells subulate and glaucous; body black; incisures of the abdomen white. It inhabits the southern parts of Europe.

SIMPLEX. Shells subulate and testaceous; the legs are simple. It is found in Europe, and is thought to be a variety of *N. podagraria*.



arises from agriculture, and the number of genteel families either resident within it, or in its neighbourhood. The market-day is Saturday; and there are three fairs during the year, which privileges were obtained by the bishop of Ely in the reign of Henry III. The petty sessions for the hundred are held here. According to the parliamentary returns of 1801, this town contained 258 houses, and 1348 inhabitants, and in those of 1811, the former are stated to have been 284, and the latter 1301 in number, *i. e.* 26 more houses, and 47 fewer inhabitants, a circumstance that seems to indicate some mistake in one of the reports.

About two miles from Needham are the villages of Creeting-All-Saints, and Creeting-Olaves. The church of the former, which was anciently a cell to the abbey of Greifstein, in Normandy, is a very curious old building; as is likewise that of Olaves, which was a cell to the abbey of Bernay. Kirby's *Suffolk Traveller*, 8vo. Magna Britannia.

NEEDHAMIA, in *Botany*, received its name from Mr. Brown, in commemoration of Tuberville Needham, canon of Soigny, late director of the Academy of Sciences at Brussels, who published at London, in 1745, an octavo volume of 126 pages, with six plates, entitled "An Account of some New Microscopical Discoveries." In this is said to be the earliest account of the particular structure and economy of the pollen in plants. Some of his writings may be found in the *Philosophical Transactions*; and others, on the subjects of Ants and Bees, in the *Memoirs of the Brussels Academy*. He was born at London in 1713, and died, probably at Brussels, in 1781.—Brown *Prod. Nov. Holl.* v. 1 549.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Epacridæ*, Brown.

Gen. Ch. *Cal.* Perianth inferior, of five linear-awl-shaped equal, somewhat membranous, coloured leaves, with a pair of oblong, coriaceous, external ones, of the same length. *Cor.* of one petal, falver-shaped; tube twice the length of the calyx; limb in five beardless equal segments, plaited in the bud, their sinuses elevated. Nectary cup-like, surrounding the base of the germen. *Stam.* Filaments five, thread-shaped, inserted into the tube; anthers oblong, included within the tube. *Pist.* Germen superior, roundish, of two cells; style short, columnar; stigma obtuse. *Peric.* Drupa dry. *Seed.* Nut of one or two cells?

Eff. Ch. Outer calyx of two leaves. Corolla falver-shaped; its limb five-cleft, beardless, with elevated sinuses; plaited in the bud. Stamens included in the tube. Drupa dry, of one or two cells.

1. *N. Pumilio*. Dwarf Needhamia.—The only known species, gathered by Mr. Brown, in the south part of New Holland, and by Mr. Menzies, from whom we have a specimen, at King George's Sound. The stem is shrubby, three or four inches high, divided from the very base into numerous, spreading, roundish, notched, leafy, compound branches, hoary when young. Leaves minute, opposite; somewhat imbricated, in two rows crossing each other alternately, sessile on the notches of the branches, triangular, obtuse, keeled, entire, concave, smooth; the upper ones finely fringed, and somewhat more dilated, or ovate. Flowers axillary, sessile, solitary, from several of the upper and broader leaves, beyond which, after flowering, the branch is subsequently extended, and clothed with the ordinary leaves, till it blossoms again higher up. Calyx fringed, reddish. Corolla white, turning reddish-brown in drying, about a quarter of an inch long.

NEEDLE, a very common little instrument, or utensil, made of steel, pointed at one end, and pierced at the other; used in sewing, embroidery, tapestry-work, &c.

Needles make a very considerable article in commerce; and the consumption of them is almost incredible. The sizes are from N<sup>o</sup> 1, the largest, to N<sup>o</sup> 25, the smallest. There is scarcely any commodity cheaper than needles; which will appear something extraordinary to the reader, after he has been shewn the great number of operations they undergo, before they are brought to perfection.

NEEDLES, *Manufacture of.* German and Hungarian steel is of most repute for needles. The first thing is to pass it through a coal fire, and under a hammer, and to bring it out of its square figure into a cylindrical one: this done, it is drawn through a large hole of a wire-drawing iron, returned into the fire, and drawn through a second hole of the iron, smaller than the first; and thus successively from hole to hole, till it has acquired the degree of fineness required for that species of needles; observing every time it is to be drawn, that it be greased over with lard to render it the more manageable. The steel, thus reduced into a fine wire, is cut in pieces of the length of the needles intended. These pieces are flattened at one end, on the anvil, in order to form the head and eye: they are then put into the fire, to soften them farther; and thence taken out and pierced at each extreme of the flat part, on the anvil, by the force of a punchon of well tempered steel, and laid on a leaden block, to bring out, with another punchon, the little piece of steel remaining in the eye.

The corners are then filed off the square of the heads, and a little cavity filed on each side the flat of the head. This done, the point is formed with a file; and the whole filed over.

They are then laid to heat red-hot, on a long, flat, narrow iron, crooked at one end, in a charcoal fire; and, when taken out thence, are thrown into a basin of cold water to harden. On this operation a good deal depends; too much heat burns them, and too little leaves them soft; the medium is only to be learnt by experience.

When they are thus hardened, they are laid in an iron shovel, on a fire, more or less brisk, in proportion to the thickness of the needles; taking care to move them from time to time. This serves to temper them, and take off their brittleness; great care, here too, must be taken of the degree of heat. They are then straightened, one after another, with the hammer; the coldness of the water, used in hardening them, having twisted the greatest part of them.

The next process is the polishing. To do this, they take twelve or fifteen thousand needles, and range them in little heaps against each other, on a piece of new buckram, sprinkled with emery dust. The needles, thus disposed, emery-dust is thrown over them, which is again sprinkled with oil of olives: at last, the whole is made up into a roll, well bound at both ends.

The roll is then laid on a polishing-table, and over it a thick plank, loaded with stones, which two men work backwards and forwards, a day and an half, or two days successively; by which means the roll, thus continually agitated by the weight and motion of the plank over it, the needles within, being rubbed against each other with oil and emery, are infensibly polished.

In Germany, instead of hands, they polish with water-mills.

After polishing, they are taken out, and the filth washed off them with hot water and soap: they are then wiped in hot bran, a little moistened, placed with the needles in a round box, suspended in the air by a cord, which is kept stirring till the bran and needles be dry.

The needles, thus wiped in two or three different brans, are taken out, and put in wooden vessels, to have the good separated



separated from those whose points or eyes have been broken, either in polishing or wiping: the points are then all turned the same way, and smoothed with an emery-stone, turned with a wheel.

This operation finishes them; and there remains nothing but to make them into packets of two hundred and fifty each.

NEEDLES, *Surgeons'*, are generally made crooked, and their points triangular: however, they are of different forms and sizes, and bear different names, according to the purposes they are used for.

The largest are needles for amputation; the next, needles for wounds; the finest, needles for sutures. They have others, very short and flat, for tendons; others, still shorter, and the eye placed in the middle, for tying together of vessels, &c. Needles for couching cataracts are of various kinds; all of which have a small, broad, and sharp point or tongue: and some with the sulcus at the point. Surgeons have sometimes used two needles in this operation, one with a sharp point for perforating the coats of the eye, and another with a more obtuse point for depressing or couching the opaque crystalline lens: but care should be taken in the use of any of these, that they be first well polished, with cloth or leather, before they are applied to the eye. See CATARACT and COUCHING.

Mr. Warner observes, that the blade of the couching needle should be at least a third part larger than those generally used upon this occasion, as great advantage will be found in the depressing of the cataract, by the increased breadth of the blade of that instrument. The handle, also, if made somewhat shorter than usual, will enable the operator to perform with greater steadiness than he can do with a larger handled instrument.

It is to be observed, that needles of silver pierce more easily in stitching arteries after an amputation, than those made of steel. Monro, in Med. Ess. Edin. vol. v. art. 41.

NEEDLE, *Magnetical*, in Navigation, denotes a needle touched with a loadstone, or sustained on a pivot or centre, on which, playing at liberty, it directs itself to certain points in or under the horizon. See MAGNET.

Magnetical needles are of two kinds; viz. *horizontal* and *inclinator*.

NEEDLES, *Horizontal*, are those equally balanced on each side the pivot which sustains them: and which, playing horizontally with their two extremes, point out the north and south points of the horizon. For their application and use, see COMPASS.

NEEDLE, *Construction of an Horizontal*. A piece of pure steel is procured, of a length not exceeding six inches, left its weight impede its volubility; very thin, to take its verticity the better; and not pierced with any holes, or the like, for ornament sake, which prevent the equable diffusion of the magnetic virtue.

A perforation is then made in the middle of its length, and a brass cap or head soldered on, whose inner cavity is conical, so as to play freely on the style or pivot, headed with a fine steel point.

The north point of the needle, in our hemisphere, is made a little lighter than the southern, the touch always destroying the balance, if well adjusted before; and rendering the north end heavier than the south, and thus occasioning the needle to dip.

Now to give the needle its verticity, or directive faculty, it is to be rubbed leisurely on each pole of a magnet, from the south pole towards the north; first beginning with the northern end, and going back at each repeated rub toward

the south. A rub in a contrary direction takes away the power communicated by the former.

Compass needles may acquire the magnetic virtue by means of magnetic bars in the following manner: lay two needles of equal length, about an inch asunder, with the north end of one, and the south end of the other pointing the same way, and applying two conductors in contact with their ends: then, with two magnetic hard bars, one in each hand, and held as nearly horizontal as can be, with the upper ends, of contrary names, turned outwards to the right and left, let a needle be stroked or rubbed from the middle to both ends at the same time, for ten or twelve times, a north end of a bar going over the south end of the needle, and the south end of a bar going over the north end of a needle: then, without moving from the place, change hands with the bars, or, in the same hands, turn the other ends downwards, and stroke the other needle in like manner, and they will both be magnetical: but to make them still stronger, repeat the operation three or four times from needle to needle; and at last turn the lower side of each needle upwards, and repeat the operations of rubbing them, as on the other sides.

In the rubbings or touchings to procure magnetism, the hand should not return directly back the way it came, but should return in a kind of oval figure, carrying the hand about six or eight inches beyond the point, where the touch ended; but not beyond, on the side where the touch begins.

If, after touching, the needle be out of its equilibrium, something must be filed off from the heavier side, till it balance evenly. See MAGNET.

The needles that were formerly applied to compasses, on board our merchant ships, were formed of two pieces of steel wire; each of which was bent in the middle, so as to make an obtuse angle; and their ends being applied together made an acute one; so that the whole represents the form of a lozenge. Dr. Knight, to whom we are indebted for the improvement of the compass, found, by repeated experiments, that these needles not only varied from the true direction, but from one another, and from themselves: and he has shewn that these irregularities were owing to their structure: for the wires of which the needle was composed were hardened only at their ends; now if those ends are not equally hard, or if one end be hardened higher up than the other, when they come to be put together, in fixing them to the card, that end which is hardest will destroy much of the virtue of the other; by which means the hardest end will have the greatest power in directing the card, and consequently make it vary towards its own direction: and as the wires are disposed in the form of a lozenge, these cards can have but little force; so that they will often, when drawn aside, stand at the distance of several degrees on either side the point from whence they are drawn; for all magnetical bodies receive an additional strength by being placed in the direction of the earth's magnetism, and act proportionably with less vigour when turned out of it. Therefore, when needles of this kind are drawn aside from their true point, two of the parallel sides of the lozenge will conspire more directly than before with the earth's magnetism, and the other two less in that direction: by this means the two former sides will very much impede its return, and the two latter will have that impediment to overcome, as well as the friction, by their own force alone.

The needles formerly used on board the men of war, and some of the larger trading ships, were made of one piece of steel, of a spring temper, and broad towards the ends, but tapering towards the middle. Every needle of this form is found to have six poles instead of two; one at each end,



two where it becomes tapering, and two at the hole in the middle. This inconvenience is owing to their shape; for the middle part, being very slender, has not substance enough to conduct the magnetic stream quite through from one end to the other. In order to avoid these inconveniences and errors, the needle, contrived by Dr. Knight for his compass, is quite straight and square at the ends, and consequently has only two poles, although the curves are a little confused about the hole in the middle. Needles of this construction, after vibrating a long time, will always point exactly in the same direction; and if drawn ever so little on one side, will return to it again, without any sensible difference. Hence Dr. Knight concludes, that a regular parallelopiped is the best shape for a needle, as well as the simplest; with the holes for the caps as small as can be well contrived; or if it can be made to answer the purpose, without any hole at all, it will be still more perfect.—There is a peculiar advantage attending Dr. Knight's needles; for as they are tempered much higher than usual, they are able to contain a much greater quantity of the magnetic force. See COMPASS.

Mr. Michell suggests, that it would not be amiss to cover the needles made use of in the sea-service, with a very thin coat of linseed oil, or some kind of varnish, that may keep them from rusting, which is generally reckoned to injure all magnetical bodies that are liable to it. Needles may be touched through such a coat, by applying a great number of bars, if not according to the common method of making magnets. He also apprehends, that coated needles may retain a greater degree of magnetism, than they otherwise would do.

Mr. Michell also proposes to increase the weight and length of mariners' needles; and he observes, that long needles, properly hung, traversing to a greater degree of exactness than the short ones, may be of considerable service on many occasions: particularly in mines for discovering the bearing of one place from another, that they may be able to sink a shaft from above, over any place at pleasure. In many sorts of mines, especially those of coal, there are often small quantities of magnetical iron ore, which draw the needle out of its proper direction; now the long needles are less liable to be disturbed by any small things, already magnetical, than shorter ones. Michell on Magnets, p. 42, &c.

A needle, on occasion, may be prepared without touching it on a load-stone: for a fine steel needle, gently laid on the water, or delicately suspended in the air, will direct itself to the north and south.

Thus also a needle, heated in the fire, and cooled again in the direction of the meridian, or even only in an erect situation, acquires the same faculty.

The needle is not found to point precisely to the north, except in very few places; but deviates from it, more or less, in different places, and that too at different times; which deviation is called the *declination*.

NEEDLE, *Declination of the*, is the variation of the horizontal needle from the meridian; or the angle it makes with the meridian, when freely suspended in an horizontal plane. See DECLINATION.

NEEDLES, *Cleopatra's*. See PORPHYRY.

NEEDLES, *Inclinatory*, or *Dipping*. See DIPPING Needle.

NEEDLE-Fish, in *Ichthyology*, the English name of the syngnathus, with the middle of the body heptangular, and the tail pinnated.

It is the same fish with the acus Aristotclis species altera major. See SYNGNATHUS Acus.

NEEDLE-Shell, in *Conchology*, the English name of a species of centronia, or echinoderma.

NEEDLE-Shell is also the English name of a species of turbo, which is slender, and has ventricose spires, and a small mouth.

NEEDLE, *Shepherd's*, the name by which some writers call the *scandix*, or *Venus's comb*.

NEEDLES, *Touch*. See TOUCH Needles.

NEEDLES, *The*, in *Geography*, rocks in the English channel, near the western extremity of the Isle of Wight. There were formerly three of these rocks, but towards the end of the eighteenth century, the most elevated of them, called "Lot's wife," and rising about 120 feet above low-water mark, disappeared. N. lat. 50° 44'. W. long. 1° 33'. See ISLE of Wight.

NEEDLE Rock, a rock in the Mergui Archipelago, about half a mile N.W. of Cat island.

NEEDUMARAN, a town of Hindoostan, in the Carnatic; 15 miles N.E. of Nattam.

NEEDWOOD FOREST, an extensive district of woodland in the hundred of Totmanflow, and county of Stafford, England. It anciently formed a portion of the property of the dukes of Lancaster, in whose right it has belonged to the English monarchs for several centuries. It is divided into the four wards of Marchington, Yoxall, Barton, and Tutbury, each of them containing about five miles in compass, exclusive of Uttoxeter-wood, Boughay, &c. The aspect of this forest is finely varied with hill and dale, and, more particularly towards its northern parts, exhibits a series of deep glens, inclosed by steep and rugged precipices, covered with a profusion of trees. According to a survey made in 1765, this forest extends from the confines of Hanbury to Yoxall, about a mile to the north of the river Trent, and comprises 9920 acres of land, of which about 1000 acres contain oak trees of full growth and size. Among these is the Swilcar oak, perhaps the most majestic tree in England, which is supposed to have stood upwards of six hundred years. There were formerly eight parks empaled within the ring of this forest. The officers are a lieutenant and chief ranger, assisted by a deputy, four lieutenants, four keepers, and an axe-bearer. A court is still held every year by the king's steward of the honour of Tutbury, in which Needwood is included, when a jury of twenty-four persons, resident within the jurisdiction, present and amerce all persons guilty of "encroaching on the forest, or committing offences in mart or venison." Some part of the forest has been lately inclosed for cultivation. Shaw's History of Staffordshire, 2 vols. folio. Pitt's Agricultural Survey of Staffordshire, octavo.

NEEFS, PETER, in *Biography*, a painter of architecture, and a disciple of Henry Steenwick, was born at Antwerp in the year 1570. He was particularly skilful in perspective, and generally chose such subjects as required a considerable display of that science; such as the interior of churches and splendid halls, &c. These he drew with great neatness and effect, and painted very clear, gay, and agreeable, but he never equalled the truth of his master. His execution of the mouldings and masses of columns in the varied Gothic works which he chose as models, is too neat, and too much made up of lines for real imitation; but that very defect gives them lightness; and the truth with which he drew the forms of the building, and proportioned his figures, which are very freely wrought, though not unfrequently by other artists, renders them very agreeable. Van Fulden, Teniers, and Brughel, were often called upon to assist Neefs, and by their skilful execution made amends for his want of knowledge of the human figure. He died at the age of 81, leaving a son, whose name also was Peter, and who is denominated *the Young*, in contradistinction to his father,



father, whose excellence in the art of painting he never rivalled, although he had the advantage of his example and instruction, and practised in the same branch of the art.

NEEHHEHOW, in *Geography*. See ONEEHOW.

NEEKALLA, a town of Hindoostan, in Baglana; 10 miles E. of Naderbar.

NEELGUR, a town of Hindoostan, in Orissa; nine miles W.S.W. of Balafore. — Also, a town of Hindoostan, in Golconda; 24 miles S.W. of Combamet.

NEEMCUR, a town of Hindoostan, in Oude; 15 miles S.S.W. of Kairabad. N. lat.  $27^{\circ} 20'$ . E. long.  $81^{\circ}$ .

NEEMDUR, a town of Hindoostan, in Agra; 13 miles E. of Kerowly.

NEEMLA, a town of Candahar, on the Kemah; 50 miles S.E. of Cabul.

NEENEEVA, one of the smaller Friendly Islands; 28 miles N.N.E. of Annamooka. S. lat.  $19^{\circ} 47'$ . E. long.  $185^{\circ} 22'$ .

NEENY, a town of Algiers; 10 miles E.S.E. of Baggai, formerly Bagafi.

NEEPO, a town on the W. coast of the island of Celebes. S. lat.  $3^{\circ} 50'$ . E. long.  $120^{\circ}$ .

NEER. ARNOLD VANDER, in *Biography*, a landscape-painter, who was born at Amsterdam in 1619. His subjects are generally chosen from among the scenes of the Low Countries. A village, or a few houses upon the banks of a canal or river; such a collection of forms as the eye of taste alone can combine agreeably, by a beautiful distribution of sky, of light and dark clouds, and reflections in the water, Vander Neer never failed to present with a pleasing aspect; and he executed his works, which are generally very small, with great brilliancy and neatness of pencilling. Very frequently his effects are chosen by moonlight; whose partial gleams breaking the formality of the canals, he imitated most beautifully. Owing to the simplicity of his manner, and his painting very thin, his pictures are now seldom found uninjured; when they are pure and well chosen, they are very valuable. He died at the age of 64, and left a son, Eglon Hendrick Vander Neer, who practised the art of painting in various branches with considerable success. His portrait, painted by himself, is among those that adorn the gallery of Florence. He lived till the year 1703, dying at the age of 60.

NEERCASSEL, JOHN DE, a celebrated Dutch Catholic prelate, was born at Gorcum in the year 1626. He became member of the congregation of the Oratory of Paris, and after distinguishing himself for several years by his lectures on philosophy and divinity in their seminaries, was promoted to the archdeaconry of Utrecht, and appointed apostolic provincial in Holland and the other United Provinces. In the year 1662, he was created archbishop of Utrecht by the chapter of that place, but the pope refused to sanction the nomination, declaring that the vacant see should be filled by the abbé Catz, dean of the chapter of Haarlem. The two competitors, being alike friends to peace, agreed to compromise the matter by dividing the episcopal labours, and that Catz should govern the diocese of Haarlem, under the title of archbishop of Philippi, while Neercassel presided over the diocese of Utrecht, with the title of bishop of Castoria. This arrangement was approved by the papal nuncio, and after the death of Catz, the subject of this article remained sole prelate of all the Dutch Catholics during the remainder of his life. His zeal and assiduity in discharging the functions of this post were unwearied; and he fell a sacrifice to the fatigue occasioned by his exertions at Zwol, in 1686, when he was at the age of sixty.

He was author of many theological pieces, among which was his "Amor Pœnitens," a discourse on the love of God, as exercised in the sacrament of penance, which was censured by pope Alexander VII., and prohibited by a decree of the sacred congregation. The Jesuits made some unsuccessful attempts to obtain a formal condemnation of it from Innocent XI. It has been translated into several languages. The most complete edition is said to be that of 1684, in two vols. 12mo. A French version of it was published in 1741, in three vols. 12mo. The name of Neercassel was held in high veneration for a long series of years by the Catholics of Holland. Moreri.

NEERDA, in *Ancient Geography*, a town of Babylonia, in Mesopotamia, where the Jews had a celebrated school.

NEERMUL, in *Geography*, a town of Hindoostan, in Dowlatabad; 70 miles N. of Warangole. N. lat.  $19^{\circ} 5'$ . E. long.  $79^{\circ} 5'$ .

NEERSEN, a town of France, in the department of the Roer, and chief place of a canton, in the district of Crevelt. The place contains 608, and the canton 21,661 inhabitants, in 17 communes.

NEESOLY, a town of Hindoostan, in Oude; four miles N.N.E. of Gooracpour.

NEETA, a town of Itria; 12 miles E. of Pedena.

NEETAMUNDY, a town of Bengal; 16 miles W. of Beyhar.

NEEVAL, a town of Hindoostan, in the Carnatic; 30 miles S.W. of Madras.

NEEXEAT REGNO, in *Law*, is a writ to restrain a person from going out of the kingdom, without the king's licence. (F. N. B. 85.) It may be directed to the sheriff, to make the party find surety that he will not depart the realm: and on refusal, to commit him to prison: or it may be directed to the party himself; and if he then goes, he may be fined. (3 Inst. 178.) And this writ is granted on a suit being commenced against a man in the chancery, when the plaintiff fears the defendant will fly to some other country; and thereby avoid the justice and equity of the court; which hath been sometimes practised: and when thus granted, the party must give bonds to the master of the rolls, in the penalty of 1000*l.* or some other large sum, for yielding obedience to it; or satisfy the court, by answer, affidavit, or otherwise, that he hath no design of leaving the kingdom, and give security.

NEFASTUS, a Latin term. The Romans used the appellation *dies nefasti*, for those days wherein it was not allowed to administer justice, or hold courts; nor for the prætor to pronounce the three solemn words or formulas of the law, *Do, dico, addico*; *I give, I appoint, I adjudge*. See FASTI.

These days were distinguished in the calendar by the letter N. or N. P. *nefastus primo*, as when the day was only *nefastus* for the first part thereof.

NEFTA, in *Geography*, a town of Africa, in Biledulgerid, seated on the lake of Marks, anciently called "Negeta," near which are some vestiges of the Romans; 60 miles S. of Gassa. N. lat.  $33^{\circ} 30'$ . E. long.  $8^{\circ}$ .

NEFUS MUSCA, a town of Abyssinia; 90 miles S.S.E. of Gondar.

NEGADA. See ANEGADA.

NEGANOOR, a town of Hindoostan, in the country of Coimbatore; 20 miles S.E. of Coimbatore.

NEGAPATAM, a sea-port town of Hindoostan, situated on the coast of Tanjore; so called in the language of the natives, and denoting the city of serpents, on account of the respect paid to these animals, which they deem it sinful to destroy. The Portuguese, sensible of the importance



portance of this city, as soon as they had possession of it, secured it by walls, and improved it in a variety of respects, so that it became a beautiful city, adorned with several fine churches, and a superb college, belonging to the Jesuits. When they lost the island of Ceylon, the Dutch became masters of it; by them it was fortified, and retained till, in the year 1782, it was captured by the English, to whom it was ceded by the treaty of peace in 1783. It has broad streets, convenient though ancient houses, handsome churches, and in its environs a great number of pagodas, some of which are richly ornamented, and others mean. Negapatam is a place of considerable trade, being inhabited by various descriptions of Indians, as well as Moors and Armenians, and guarded by a fortress. It is principally valuable on account of its local position. N. lat.  $10^{\circ} 46'$ . E. long.  $79^{\circ} 56' 35''$ .

NEGAPATLA, a town of Hindoostan, in the Carnatic; 30 miles N.N.W. of Bomrauzepollam.

NEGARA, a town of the island of Borneo, and capital of the kingdom of Banjer-Massing, situated near a large river, which runs into the sea; 100 miles from the sea, and 60 N. from the town of Banjer-Massing.

NEGATION, in *Logic*, an act whereby the mind separates one idea from another; or affirms the one to be different from the other; as the soul is not matter.

NEGATION is also applied by logicians to not-being, as it has relation to modes, and denotes the absence of that which does not naturally belong to the thing spoken of, or which has no right, obligation, or necessity to be present with it. In this sense it is opposed to *privation*, and was denominated in the schools *absentia habitus*.

NEGATIVE, a term that denies, or implies a denial of anything.

Logicians, &c. say a negative cannot be proved but by converting it into an affirmative.

NEGATIVE *Heretics*, in the language of the Inquisition, are those who, being accused of heresy, by witnesses whose evidence they do not deny, still keep on the negative, make open profession of the Catholic doctrine, and declare their abhorrence of heresy.

There are also negative *schisms*, as well as positive ones.—In the negative, it is sufficient to reject the errors of a church, without separating from it, or setting up a distinct society.

NEGATIVE *Penalties*, the laws whereby certain persons are excluded from honours, dignities, &c. without inflicting any direct and positive pains on them.

NEGATIVE *Power*, in *Algebra*. See *POWER*.

NEGATIVE *Pregnant*, in *Law*, a negative which implies or brings forth an affirmative.

As if a man, being impleaded to have done a thing on such a day, in such a place, denies he did it, *modo et forma declarata*; which implies, nevertheless, that he did it in some sort.

NEGATIVE *Quantity*, in *Algebra*. See *QUANTITY*.

NEGATIVE *Sign*. The use of the negative sign; in algebra, is attended with several consequences that at first sight are admitted with difficulty, and has sometimes given occasion to notions that seem to have no real foundation. This sign implies that the real value of the quantity represented by the letter to which it is prefixed, is to be subtracted; and it serves, with the positive sign, to keep in view what elements or parts enter into the composition of quantities, and in what manner, whether as increments or decrements (that is, whether by addition or subtraction), which is of the greatest use in this art.

In consequence of this, it serves to express a quantity of an opposite quality to the positive, as a line in a contrary

position; a motion with an opposite direction; or a centrifugal force in opposition to gravity, and thus often saves the trouble of distinguishing, and demonstrating separately, the various cases of proportions, and preserves their analogy in view. But as the proportions of lines depend on their magnitude only, without regard to their position; and motions and forces are said to be equal or unequal, in any given ratio, without regard to their directions; and, in general, the proportion of quantities relates to their magnitude only, without determining whether they are to be considered as increments or decrements; so there is no ground to imagine any other proportion of  $-b$  and  $+a$  (or of  $-1$  and  $1$ ) than that of the real magnitudes of the quantities represented by  $b$  and  $a$ , whether these quantities are, in any particular case, to be added or subtracted. It is the same thing to subtract a decrement as to add an equal increment, or to subtract  $-b$  from  $a - b$ , as to add  $+b$  to it: and because multiplying a quantity by a negative number implies only a repeated subtraction of it, the multiplying  $-b$  by  $-n$ , is subtracting  $-b$  as often as there are units in  $n$ ; and is therefore equivalent to adding  $+b$  so many times, or the same as adding  $+nb$ . But if we infer from this, that  $1$  is to  $-n$  as  $-b$  to  $nb$ , according to the rule, that unit is to one of the factors as the other factor is to the product, there is no ground to imagine that there is any mystery in this, or any other meaning than that the real magnitudes represented by  $1$ ,  $n$ ,  $b$ , and  $nb$ , are proportional. For that rule relates only to the magnitude of the factors and product, without determining whether any factor, or the product, is to be added, or subtracted. But this likewise must be determined in algebraic computations; and this is the proper use of the rules concerning the signs, without which the operation could not proceed. Because a quantity to be subtracted is never produced in composition, by any repeated addition of a positive, or repeated subtraction of a negative, a negative square number is never produced by composition from the root. Hence,  $\sqrt{-1}$ , or the square root of a negative, implies an imaginary quantity: and, in resolution, is a mark or character of the impossible cases of a problem, unless it is compensated by another imaginary symbol, or supposition, when the whole expression may have a real signification.

Thus,  $1 + \sqrt{-1}$ , and  $1 - \sqrt{-1}$ , taken separately, are imaginary, but their sum is  $2$ ; as the conditions that separately would render the solution of a problem impossible, in some cases destroy each other's effect, when conjoined. In the pursuit of general conclusions, and of simple forms representing them, expressions of this kind must sometimes arise where the imaginary symbol is compensated in a manner that is not always so obvious.

By proper substitutions, however, the expression may be transformed into another, wherein each particular term may have a real signification as well as the whole expression. The theorems that are sometimes briefly discovered by the use of this symbol, may be demonstrated without it, by the inverse operation, or some other way; and though such symbols are of some use in the computations by the method of fluxions, its evidence cannot be said to depend upon arts of this kind. See Maclaurin's Fluxions, book ii. chap. 1.

NEGATIVELY, NEGATIVE, in the school philosophy, is variously used, in contradistinction to positive. See *POSITIVE*.

NEGELSTADT, in *Geography*, a town of Saxony, in Thuringia; 10 miles S.E. of Muhlhausen.

NEGEM, a town of Arabia, in the province of Hedsjas, or Hedjas; 30 miles W. of Giorash.

NEGGADE. See *NEKKADE*.

NEGILA,



NEGILA, a tolerably well-built town, or rather a village, of Egypt, on the east bank of the Nile, within one-fourth of a league from Zaira.

NEGKO, the name of a class of islands in the Eastern Pacific ocean, between Kamtschatka and America, containing the sixteen that are called *Andreanofskie Islands*; which see.

NEGOIESZTI, a town of Walachia, seated on the Artisch, where the Russians had a garrison in 1773; 25 miles S.E. of Bucharest.

NEGOMBO, NIGOMBO, or *Nigumbo*, the largest village in the island of Ceylon, and containing, for its size, the greatest number of inhabitants, built by the Portuguese, and taken from them by the Dutch, is situated on the sea-coast in a highly picturesque spot, accounted one of the healthiest in the island; 24 miles N. of Columbo. Many Dutch reside in this place, on account of the pleasantness and salubrity of its situation; and warehouses and gardens are scattered up and down in delightful groves of cocoa-nut and other trees. The Dutch built a fort here for the protection of the cinnamon-cutters, as a considerable quantity of that spice grows in the adjacent district. Store-houses are also erected in the fort, where the cinnamon, after being dried, is lodged, till an opportunity offers for conveying it to Columbo. This cinnamon is reckoned equal in quality to any in the island. The fort is not strong, but is well defended; and within it are three long rows of buildings, which serve for barracks to the troops, and for store-houses to the cinnamon. The command is now given to a field-officer, who acts as president of the "Landraad," or civil court, appointed to hear and determine differences among the natives, and take cognizance of the crimes committed within this district. These civil courts existed under the Dutch, and have been established by governor North at all the military posts and commands round the island. Nigumbo is very advantageously situated for carrying on inland trade, particularly with Columbo and its neighbourhood, as a branch of the Mulivaddy here runs into the sea. At the mouth of it is a small harbour, where sloops and other small vessels often put in and land their cargoes, which are afterwards conveyed up the Mulivaddy, and then, by canals which communicate with it, to the lake which skirts the town of Columbo. One of the principal articles exported from Nigumbo by the inland communications consists of fish. This trade is considered as the property of government, and is annually farmed out for several thousand rupees. A Moor, or Malabar, is usually the farmer, who is allowed to dispose of the fish caught here, and he employs all the boats belonging to the place. The people employed are compelled by the authority of government to fish every day, when the weather permits, Sundays and particular festivals excepted. The fish, as soon as caught, are put into boats, conveyed by the rivers and canals during the night, and sold in the bazars next morning. The fishermen go into the water up to the middle of the thighs, carrying in their hands a round basket, of a conical form, resembling our wire rat-traps without the bottom. This they plunge down into the water as far as the mud. They soon find whether they have caught a fish by its beating against the sides of the basket, and when this is the case, they thrust down their arm through the hole at the top and take hold of it. They string the fish, as they catch them, on a piece of rattan or bamboo, which is fastened round their waist, while the operation of plunging the basket is continued. Other persons are employed in splashing the water all around, in order to make the fish go towards the basket. Besides the produce of the fisheries, other sorts of traffic are carried on at Ni-

gumbo to a considerable amount. The inhabitants consist of Moors, Malabars, and Indian Portuguese; and it is remarked, that the women of those casts, as well as of the native Cinglese, are prettier here than at Columbo, and other more noted places. For its cool, healthy, and pleasant situation, Nigumbo is usually ranked next to Jafnapatam; though some give the preference to Caltura, a delightful village about 30 miles S. of Columbo. The English landed at Nigumbo in February 1796, and made themselves masters of it without opposition. From Nigumbo southward the road is extremely pleasant; it is shaded the whole way, and there are many resting places provided for travellers. About half way to Columbo is a very large choultry or barrack, to which the officers of the garrisons frequently resort on shooting parties. It is situated on a most agreeable spot, in the midst of a picturesque country; and snipe and several species of game abound in this quarter. N. lat. 7° 12'. E. long. 79° 48'. Perceval's Account of Ceylon, p. 108, &c.

NEGRAIS, an island near the S.E. coast of Ava, in the mouth of the river Perfaim. The English had a factory in this island, chiefly for the purchase of teak timber. This island was taken possession of by the English, and a survey made of it, by a person named Weldon, in the year 1687; and in this island the government of Fort St. George established a settlement. But it does not appear that much benefit was derived from the acquisition. At a much later period, *viz.* about the year 1751, the English again took possession of the Negrais, but their affairs were not conducted with prudence, and the settlement continued in a state of wavering ferment; the Caffre slaves, who had been introduced for the purpose of cultivating the lands, rose upon their masters, and, seizing upon the boats belonging to the island, effected their escape. Some time afterwards the English settlers became unhealthy; and though they did not evacuate the place, their exertions were rendered languid by the diminished probability of ultimate success. Afterwards the English settlers took a decided part with the Birmans in their contest with the Peguers; but some circumstances occurred that led them to maintain a perfect neutrality, which created suspicion in the minds of the Birmans; and this suspicion was proved not to be unfounded by clandestine negotiations which took place between the English and the Peguers. On the approach of a formidable armament belonging to the king of Pegue, the Birmans sought the co-operation of the English. But they took a decided part with the enemy, and commenced a fire on the Birman fleet. Attempts were made on the part of the Birmans, notwithstanding this hostile attack, to recover the good will of the English, and instructions were given on the part of the latter to conclude a treaty of amity and alliance with the Birman monarch. In the progress of this treaty, one of the English deputies, after the king had granted permission to the company to establish factories at Dagon and Bassien, having determined on the total demolition of Syriam, made a further requisition of the island of Negrais. Whilst friendship and union were thus likely to be established between the Birmans and the settlement at Negrais, the Peguers hazarded another attempt on the Birman post at Dagon, and were again assisted by the English ships. The attempt miscarried, nor was any other enterprise ever undertaken. In 1757, Negrais was neglected, though not abandoned. An English deputy from this island was admitted into the royal presence; and though the Birman monarch upbraided this deputy with the conduct of his countrymen in giving encouragement and protection to the disaffected Peguers, he referred him to the Portuguese interpreter and the Birman governor of Perfaim for a ratification and final



adjustment of the treaty. After some delay, an instrument was formally executed, consisting of nine articles. Some valuable commercial immunities were by these ceded to the India company; the island of Negrais was granted to them in perpetuity, together with a piece of ground opposite to the old town of Persaim, for the purpose of erecting a factory; in return for which, the company engaged to pay an annual tribute, consisting of ordnance and military stores. The king sanctioned this agreement. Negrais was, consequently, continued in the possession of the English, and the allotted portion of ground was actually measured. During the absence of Alompea, the Birman sovereign, upon a military expedition, the Peguers made an insurrection, and the English at Negrais were suspected of having been instrumental in producing it. Prejudices, of course, were excited against them, and they were represented to the Birman monarch as perfidious, hostile to his government, and conspiring to effect its overthrow. The affairs of the British government in India did not allow the necessary supplies for the support of the settlement at Negrais; and on the 14th of May, captain Newton, who was recalled, reached Bengal with 35 Europeans and 70 natives; having left a few persons to take care of the teak timber and materials for ship-building, that could not be conveniently removed, and to preserve the right of possession, if it should be determined at any future time to re-establish the settlement. Soon after this event, a deputy was sent from Bengal to execute the business above-mentioned, and to take up his residence. But, by treachery and massacre, he and the former resident were put to death at a feast prepared for them, together with five other Europeans. Thus all the settlers were either murdered or dispersed by the savage contrivance of Antonio, Portuguese interpreter to the Birman monarch; and a horrid scene of unburied bodies some time after presented itself to those who visited the island. Notwithstanding this unaccountable conduct, attempts were afterwards made to conciliate the Birman monarch, and to obtain redress for the injury that had been committed, and they were not altogether ineffectual. N. lat. 16°. E. long. 95° 32'. Symès's Embassy to Ava, vol. i. See BIRMAN Empire.

NEGRAIS, *Cape*, a cape on the coast of Ava, in the bay of Bengal. N. lat. 16°. E. long. 94° 25'. See AVA.

NEGRARO, a town of Italy, in the Veronese; 6 miles N. of Verona.

NEGRELISSE, a town of France, in the department of the Lot, and chief place of a canton, in the district of Montauban; 7 miles N.E. of it. The place contains 3126, and the canton 10,003 inhabitants, on a territory of 230 kilometres, in 8 communes. N. lat. 44° 4'. E. long. 1° 36'.

NEGRI, DON FRANCESCO, in *Biography*, a Venetian ecclesiastic, disciple of Lolli, an excellent performer on the harpsichord and violin, a composer of instrumental music, of motets and cantatas; but a mass of his composition, which was performed at a concerto spirituale for Geminiani's benefit in 1750, we thought at that time the finest music we had ever heard.

NEGRIL HARBOUR, *North*, in *Geography*, a bay at the W. end of the island of Jamaica, having North Negril point on the N., which is the most westerly point of the island of Jamaica, and South Negril point on the S. N. lat. 18° 22'. W. long. 78° 21'.

NEGRILLOS, a cluster of small islands in the Pacific ocean, near the coast of Peru.

NEGRO *Cape and Harbour* lie at the S.W. extremity of Nova Scotia.

NEGRO *Point* lies on the E. coast of Brasil, 3 leagues S.S.E. from the Rio Grande, and 14 from cape St. Rocque. NEGRO *River*, the western boundary of Guiana, in South America.

NEGRO, in *Ornithology*, the name of a large bird, approaching to the crane kind, and more usually known among authors by its Brazilian name *jabiru*.

NEGRO *Oil*, in *Botany*. See PALM-Tree.

NEGROES, a kind of black slaves, which long constituted, to the disgrace of all civilized countries, a considerable article in the modern commerce; but which, by late laudable exertions, has been in a great measure abolished both in Europe and America. See SLAVE.

The Negroes, also called *Blacks* and *Moors*, are a people of Africa, whose country extends on each side of the river *Niger*, and is called *Nigritia*, though, whether the people communicated their name to the river, &c. or received it therefrom, is not easily determined. For an account of the discriminating disposition and characters of the Negroes exported from Africa to the West Indies, &c. see EBOES, KOROMANTEES, MANDING, MOCOES, NAGOES, and PA-PAWS. See also the article MAN. To the account occurring under the several articles here referred to, of different descriptions of Negroes, we shall here add some further particulars. The Negroes from Congo and Angola are supposed by Mr. Edwards (Hist. of the West Indies) to have been originally the same people with the Whidah negroes. They are in general a slender, slightly race, of a deep and glossy black, (a tribe of the Congoes excepted, who very nearly resemble the Eboes,) and of a disposition naturally mild and docile. They seem to be fitter for domestic service than for field labour. They are said, however, to become expert mechanics; and they are supposed to be more strictly honest than many other of the African tribes.

But whatever may be the general character and dispositions of the Negroes in their own country, they are influenced in a considerable degree, as we may naturally imagine, by their condition in a state of slavery; a circumstance that soon effaces the native original impression which distinguishes one nation from another in Negroes newly imported, and creates a similitude of manners, and an uniformity of character throughout the whole body. Although the natives of the Gold Coast are reported to be firm and courageous, yet it is certain, that the Negroes in general in our islands (such of them at least as have been for any length of time in a state of servitude) are of a distrustful and cowardly disposition. So degrading is slavery, that fortitude of mind is lost as free agency is restrained. To the same cause may probably be ascribed their propensity to conceal, or violate the truth; which is so general, that the vice of falsehood is one of the most prominent features in their character. Their proneness to theft is also very prevalent. Cowardice and dissimulation have, indeed, been the properties of slavery in all ages. This unhappy condition necessarily suppresses many of the best affections of the human heart. If it calls forth any latent virtues, they are those of sympathy and compassion towards persons in the same condition; and accordingly it is found, that the Negroes in general are strongly attached to their countrymen, but, above all, to such of their companions as came in the same ship with them from Africa. But their benevolence, excepting a few cases, extends no farther. The softer virtues are seldom found in the bosom of the enslaved African. With sufficient authority, he becomes a remorseless tyrant. Their treatment of subordinate slaves, placed under their instruction and government, is in a high degree harsh, oppressive, and cruel.



Their conduct towards the inferior animal creation is severe and brutal. It has been said, however, that notwithstanding the selfish and unrelenting temper of the enslaved Africans, they are highly susceptible of love. The Negro, says Dr. Robertson, glows with all the warmth of desire natural to his climate. The tender passion, says another writer, is the most ardent one in the breast of the enslaved African. It is the only source of his joys, and his only solace in affliction. Mr. Edwards entertains doubts of the correctness of this statement. The Negroes in the West Indies, both men and women, must consider it as the greatest exertion of tyranny, and the most cruel of all hardships, to be compelled to confine themselves to a single connection with the other sex; and Mr. Edwards is persuaded, that any attempt to restrain their present licentious and dissolute manners, by introducing the marriage ceremony among them, which many persons in Great Britain have strenuously recommended, would be utterly impracticable to any good purpose. That passion, therefore, says this writer, to which (dignified by the name of love) is ascribed the power of softening all the miseries of slavery, is mere animal desire, implanted by the great Author of all things for the preservation of the species. When, indeed, age mitigates the ardour, and diminishes the fickleness of youth, many of them form attachments which produce an union for life; so that it is not uncommon to observe a venerable couple of this stamp, who, tottering under the load of years, contribute to each other's comfort, with a cheerful assiduity, which is at once amiable and affecting. The situation of aged negroes is said to be such as to compensate the hardships and sufferings of their youth. Their labour is diminished; and they derive their chief happiness from the high veneration which the Negroes in general pay to old age; and this is one of the most pleasing traits in their character. The greatest affront that can be offered to a Negro, is to curse his father and mother, or any of his progenitors. Many of them, it is said, attain to great longevity. Among other propensities and qualities of the Negroes, particular notice is taken of their loquaciousness. They are as fond of exhibiting set speeches, as if they were orators by profession; but their harangues are protracted and tedious, which they commonly introduce with a detail of their past services and hardships, particularizing the number of children which they have presented to "Massa," or master, and the tokens of kindness they have received as evidences of their peculiar merit. In the imitative arts the Negroes have little knowledge. As practical musicians, they are generally very deficient, and it is said, that they prefer a long and continued noise to the finest harmony, and frequently consume the whole night in beating on a board with a stick; which is one of their favourite musical instruments. Besides this, they have the "banja," or "merriwang," which is a kind of violoncello, played on by the finger like the guitar, and producing a dismal monotony of four notes, the "dundo," which is precisely a tabor, and the "goombay," which is a rustic drum, formed of a hollow tree, one end of which is covered with a sheep's skin. Their songs are commonly impromptu, and among them there are individuals, who resemble the improvisatore, or extempore bards of Italy, but their poetry merits little commendation. Their tunes in general are characteristic of their national manners; those of the Eboes being soft and languishing, and that of the Koromantyns heroic and martial. At the same time there is observable, in most of them, a predominant melancholy, which, to a man of feeling, is sometimes very affecting. At their merry-makings, and midnight festivals, their songs, which are occasionally fraught with ridicule and derision, manifested to-

wards one another, or their employers, abound with obscene ribaldry, and are accompanied with dances in the highest degree licentious and wanton. Their funeral songs are of the heroic or martial cast, and some of them exhibit a Pyrrhic or warlike dance, in which their bodies are much contused by running, leaping, and jumping, with many violent and frantic gestures and contortions. In songs of the latter kind, it is thought by some, that the Negroes consider death as a welcome release from the calamities of their condition, and as a passport to the place of their nativity, by which they are restored to the society of their dearest, long-lost, and lamented relatives in Africa. Others are of opinion, that this representation is a mere figment of the imagination. The Negroes are so far from courting death, that they seem to dread approaching dissolution no less than the whites. Instead of rejoicing at a sudden death, they impute it to the malicious contrivances and diabolical arts of some practitioners, in what they call *Obaah*; which see.

The origin of Negroes, and the cause of that remarkable difference in complexion from the rest of mankind, has much perplexed the naturalists; nor has any thing very satisfactory been yet offered on that head.

Mr. Boyle has observed, that the heat of the climates cannot be the true cause of the colour of Negroes; for though the heat of the sun may darken the colour of the skin, yet experience does not shew that heat is sufficient to produce a true blackness, like that of Negroes. In Africa itself, many nations of Æthiopia are not Negroes, nor were there any blacks originally in the West Indies.

In many parts of Asia, under the same parallel with the African regions, inhabited by blacks, the people are but tawny. He adds, that there are Negroes in Africa, beyond the southern tropic, and that a river sometimes parts nations, one of which is black, and the other but tawny. Boyle's Works Abr. vol. ii. p. 42. 44.

Dr. Barrere alleges, that the gall of Negroes is black, and being mixed with their blood, is deposited between their skin and scarf-skin. Diff. on the Phys. Cause of the Colour of Negroes.

We have a dissertation on this head by Dr. John Mitchell, of Virginia, in the Philosophical Transactions, N<sup>o</sup> 476. sect. 4, where he advances these propositions, and enters into a learned detail to support them.

1. The colour of white people proceeds from the colour which the epidermis transmits; that is, from the colour of the parts under the epidermis, rather than from any colour of its own.

2. The skins of Negroes are of a thicker substance, and denser texture, than those of white people, and transmit no colour through them.

3. The part of the skin which appears black in Negroes, is the corpus reticulare cutis, and external lamella of the epidermis: all other parts are the same colour in them with those of other people, except the fibres which pass between those two parts.

4. The colour of Negroes does not proceed from any black humour, or fluid parts contained in their skins; there being none such in any part of their bodies, more than in white people.

5. The epidermis, especially its external lamella, is divided into two parts by its pores and scales, two hundred times less than the particles of bodies on which their colours depend.

This is founded on Leeuwenhoek's observation, that a portion of the epidermis, no bigger than what can be discerned by the naked eye, is divided into 125,000 pores, and



these pores must divide such a portion of the skin into as many particles. But the particles of bodies on which their colours depend, are, by sir Isaac Newton's Optics, lib. ii. p. 3. prop. 7. 600 times less than those which can be discerned by the naked eye. Therefore, the particles of the skin must be about 200 times less than these; since  $\frac{123000}{200} = 208\frac{1}{2}$ . It may also be observed, that such a small portion of the epidermis is divisible into 250 scales, which must increase the number of its parts.

6. From these propositions, and from sir Isaac Newton's theory of light and colours, the doctor thinks he may conclude, that the proximate cause of the colour of Negroes is threefold; viz. the opacity of their skin, proceeding from the thickness and density of its texture, which obstructs the transmission of the rays of light, from the white and red parts under the skin, together with its greater refractive power, which absorbs these rays; and the smallness of the particles of this skin, which hinders it from reflecting any light.

7. The influence of the sun in hot countries, and the manner of life of their inhabitants, are the remote causes of the colour of Negroes, Indians, &c. And the ways of living in use amongst most nations of white people, make their colours whiter than they were originally, or would be naturally.

In support of this proposition, the doctor observes, that the skin is deprived of its white colour, by the force and influence of the sun, four ways. 1st. By being rendered opaque, from a dissipation of its more aqueous and pellucid juices. 2dly. By a concretion of its vessels and glandules, from this dissipation of its more aqueous contents, which renders the skin both thicker and denser, or more callous and rigid. 3dly. By a new accretion of many new membranes, which render it thick and opaque. 4thly. By increasing those parts or principles, in the composition of the epidermis, which have the greatest refractive power; as the terrestrial and fixed saline; but especially the tenaceous sulphureous, which refract and absorb light more strongly than any other substances; while the more transparent and pellucid principles, as the aqueous, spirituous, and volatile saline, are evaporated by the heat, which causes the other more fixed principles to be accumulated; and these particles being likewise more comminuted by the sun, will, on this account, be black; as happens to oil when well boiled. These causes, with those first mentioned, may, the doctor thinks, by conspiring, make the skin quite black; especially if we add another effect of the sun's power, a peculiar necrosis of the epidermis, occasioned by the forcible vibrations, contractions, and exsiccations of its fibres by the sun-beams, which cause it to turn black, as these, or other parts do, by the heat of an inflammation, or a fever, in gangrenes, black tongues, &c.

We cannot pretend to follow the author in all the detail of his observations on this subject, nor of his answer to a material objection already mentioned from Mr. Boyle, that the sun cannot be the cause of the colour of Negroes, because several nations, in the same latitude with those Negroes, are not made black by it. He seems to think the heat of Africa greater than that of other parts of the world. Whether it be so, or not, is, we apprehend, not easy to determine; but it would be a strong confirmation of his doctrine, if we could see any people, originally white, become black and woolly by transplantation, or *vice versa*.

Mr. Buffon, and many other writers, have attributed the colour of the Negroes to the influence of the climate. See a statement and examination of this opinion under the article MAN. See also INTEGUMENTS. Concerning the corporeal

form and mental capacities of Negroes, see MAN, and also CRANIUM.

Negroes have been brought from Guinea, and other coasts of Africa, and sent into the colonies in America, to cultivate sugar, tobacco, indigo, &c. and Peru and Mexico, to dig in the mines. This commerce, which is altogether indefensible on the principles either of religion or humanity, has been carried on by all the nations that have settlements in the West Indies; particularly by the English, Dutch, Spaniards, and Portuguese.

For an account of the rise, progress, and abolition of this infamous traffic in human beings, we refer to the article SLAVE-Trade. See also ASSIENTO.

There are various ways of procuring these Negroes: some, to avoid famine, sell themselves, their wives, and children to their princes, or great men, who have wherewithal to furnish them. Some are born to slavery, and sold by great men as their property. Some are sold, together with their families, for debt. Adultery is punished by selling the offending parties. Obi, or pretended witchcraft, is also punished in the same manner. There are various other crimes which subject the offender and his children to be sold. Others are made prisoners in war; and great numbers seized in excursions made for that very purpose by the petty princes upon one another's territories; in which it is usual to sweep away all both old and young, male and female.

The Negroes make a frequent practice of surprising one another while the European vessels are at anchor, and dragging those they have caught to them, and selling them in spite of themselves; and it is no extraordinary thing to see the son sell, after this manner, his father or mother, and the father his own children, for a few bottles of brandy, or a bar of iron.

It is not easy to obtain a precise and satisfactory account of the means by which the market for slaves has been annually kept up and supported in Africa. Many nefarious practices were unquestionably resorted to for this purpose. But the instances that have been given of slavery arising from captivity in war, delinquency, and debt, seem to be inadequate to the regular supply that furnished an annual export of 74,000 persons. Besides this number multitudes were procured from the nations bordering on the rivers of Senegal and Gambia, for the emperor of Morocco and the states of Barbary. Caravans have also travelled from thence across the continent to Upper Egypt with considerable supplies of Negroes, some of which were sent afterwards to Constantinople. Great numbers of slaves have likewise been sent from Mozambique, and the ports on the eastern coast, to Persia, Goa, and other parts of the East Indies. Hence it has been calculated that Africa has been drained annually of no less than 150,000 of its natives.

As soon as the ship has its complement, it immediately makes off; the poor wretches, while yet in sight of their country, falling into such deep grief and despair in the passage, that a great part of them languish, fall into sickness, and die: while others of them dispatch themselves. The only sure means to preserve them, is to have some musical instrument play to them, be it ever so mean. But this excessive love for their country abates as they get farther off. For other particulars, see SLAVE-Trade.

It is now laid down, that a slave or negro, the instant he lands in England, becomes a free man; that is, so far as that the law would protect him in the enjoyment of his person and property. But with regard to any right which the master may have acquired to the perpetual service of John or Thomas, this will remain exactly in the same state as before. Hence also it follows, that the infamous and unchristian



tian practice of withholding baptism from negro servants, left they should thereby gain their liberty, is totally without foundation, as well as without excuse; for the slave is intitled to the same protection in England before, as after baptism, and whatever service the heathen negro owed to his American master, the same he is bound to render, when brought to England and made a Christian. Blackit. Com. book i. p. 425.

NEGROES, *Island of*, or *Buglas*, in *Geography*, one of the Philippine islands, about 240 miles in circumference, abounding in rice, for which the inhabitants pay tribute: it supplies Sebu and other adjacent parts. It derives its name from the blacks with curled hair, who occupy the mountains, and among whom the lands, both on the tops and the sides of the mountains, are distributed. Their intestine wars are frequent and fatal, as they use poisoned arrows, which are headed with iron, flint, bone, or wood hardened in the fire. The mouths of the river are occupied by another tribe of blacks, who have no intercourse with the others, and who give the Spaniards, to whom they are inveterately hostile, no quarter. When the island is invaded by pirates, they defend it by their arms, and having accomplished this service, which they perform as the old lords of the island, they retire. The Bifays, who live on the plain and are most numerous on the W. side, supply these blacks with rice, as an acknowledgment for permission to settle there, and the blacks in return furnish them with wax. The island contains about 3000 persons, who pay tribute, and are governed by a corregidore and a military commander. The cacao, which the island produces, was first brought to the Philippines from New Spain: the rice is produced in the mountains without watering. N. lat.  $10^{\circ} 10'$ . E. long.  $122^{\circ} 30'$ .

NEGROLAND, or NIGRITIA, an immense extent of country in the interior part of Africa, comprehending many large and populous kingdoms, and extending from W. long.  $7^{\circ}$  to E. long.  $27^{\circ}$ , and from  $10^{\circ}$  to  $25^{\circ}$  N. lat.; bounded on the N. by Sahara and mountains that separate it from Barbary, on the E. by Nubia and Abyssinia, on the S. by Guinea and unknown countries, and on the W. by Guinea. The Arabs call the country denominated by European geographers Nigritia, Soudán, and the natives give it the name of Aafnou, both words denoting "the land of the Blacks;" but all these appellations alike apply only to a part of the extensive region to which their proper import belongs: but in this limited sense, the term Soudán is differently used: whilst some of the Africans restrict it to the empire of *Casbna*, N. of the Niger, (which see). Others extend it to the Negro states on the S. of the river. Some parts, especially near the Niger, are represented as very fertile, others are no less sandy and desert. The population must be very considerable, as it has been a source of ample supply to European traders.

NEGROPONT, a large and important island of the Grecian Archipelago, about 100 British miles in length by 20 in breadth, formerly called *Eubaa*, which see. It is divided from the continent by a strait anciently denominated Euripus, now the gulf of Negropont, of such narrow extent near the capital, that a galley can hardly pass through; and joined to the continent by a bridge, as it was formerly thought to have been connected by an isthmus. The island is remarkable for its fertility, and the level parts produce in great abundance grain, wine, oil; and all kinds of excellent fruits. The mountains are for a great part of the year covered with snow; the highest is called Oche. The most noted of its capes are Capo d'Oro, or Capo Chimi, Capo Figara, anciently Caphareus, and Capo Liter, formerly

Cenæum. This island had once many considerable cities; but the only places now worthy of notice are Negropont and Castell Rosso. It was taken from the Venetians in 1740 by Mahomet II. N. lat.  $38^{\circ}$  to  $39^{\circ} 10'$ . E. long.  $23^{\circ} 10'$  to  $24^{\circ} 44'$ .

NEGROPONT, called also *Egripo*, a sea-port town on the W. coast of the above-mentioned island, supposed to be situated on the ruins of the ancient Chalcis, the capital of the island. The admiral of Turkey, who is governor of the island and the adjacent parts of Greece, resides here; and the harbour is seldom without a fleet of galleys. It is the see of a Greek bishop. N. lat.  $38^{\circ} 30'$ . E. long.  $23^{\circ} 54'$ .

NEHAVEND, a town of Persia, in the province of Irak; supposed by fabulous tradition to have been built by Noah, and from him at first called Noahavend. In the year 638, Jezdegird, king of Persia, lost his life and kingdom in a battle at this place with the caliph Omar; 200 miles N. of Ispahan.

NEHEIM, a town of Westphalia; 48 miles N.E. of Cologne.—Also, a town of Westphalia, in the bishopric of Paderborn; 12 miles N.E. of Paderborn.

NEHEMIAH, sometimes called the *second book of Ezra*, a canonical book of the Old Testament, so called from the name of its author. Nehemiah was the son of Hilkiah, of the tribe of Levi, was born at Babylon during the captivity, and succeeded Ezra in the government of Judah and Jerusalem. He was a Jew, and was promoted to the office of cup-bearer to Artaxerxes Longimanus, king of Persia; when the opportunities he had of being daily in the king's presence, together with the favour of Esther, the queen, procured him liberty to repair and fortify the city of Jerusalem, in the same manner as it was before its destruction by the Babylonians. On his going to Jerusalem, in the 20th year of the reign of Artaxerxes, he finished the rebuilding of the walls in 52 days, and dedicated the gates of the city with great solemnity. He then reformed some abuses which had crept in among his countrymen. The history of these transactions is the subject of this book.

Nehemiah, after staying twelve years at Jerusalem, returned to Babylon; and having continued in Babylon for several years, he obtained leave of the king of Persia to go and end his days in his own country; where he died about the end of the reign of Darius Nothus, or in the beginning of that of Artaxerxes Mnemon. To the chronology of this book it has been objected, that in chap. xii. 22. mention is made of the reign of Darius Codomannus, and of the high-priest Jaddua, who went to meet Alexander the Great; and that it is morally impossible that Nehemiah should have lived to that time; because from the 20th year of Artaxerxes Longimanus to the reign of Darius Codomannus and the priesthood of Jaddua, there was an interval of more than 100 years. For the solution of this difficulty it has been suggested, that it is not certain that Darius, mentioned in this place, was Darius Codomannus; probably this was Darius Nothus, who died about 40 years after the 20th year of Artaxerxes Longimanus; and it is not said, that Jaddua or Jaddus was high-priest already. He might have been born towards the end of the reign of Darius Nothus, or in the beginning of the reign of Mnemon, and might still have been alive in the time of Alexander. But it is probable, that what is said in this place, from the beginning to the 27th verse of the 12th chapter, was an interpolation, or added afterwards, as it has no connection with what goes before or comes after, and interrupts the series of the history. For Nehemiah, after he had related in what manner he had rebuilt the walls of the city of Jerusalem, in the 11th chapter, gives



us a catalogue of the families and persons who inhabited it. It was natural that he should afterwards give an account of the dedication of the city walls, which begins at the 27th verse : and the whole of that which is said between these two accounts concerning the succession of the Levites and high-priests seems foreign to the purpose. Dupin's Hist. Canon.

NEHERPOUR, in *Geography*, a town of Hindoostan, in Oude ; 34 miles N.E. of Manickpour.

NEHKON, a principality of Yemen, in Arabia, which is a small district between Dsjof and Haschid-u-Bekil. The scheick is an independent prince, who possesses a few small inconsiderable towns, with a fertile mountain, on which are many villages. The inhabitants of Dieban are free ; but they always join the scheick of Nehkon in his wars with the Imam.

NEHLA, a town of Hindoostan, in the circar of Jyena-gur ; 10 miles N. of Jyenagur.

NEHOTENAN, a town of Cochinchina, on a river which runs into the Chinese sea, forming at its mouth a bay. N. lat.  $12^{\circ} 55'$ . E. long.  $109^{\circ} 9'$ .

NEHRWALEH, a town of Hindoostan, and the ancient capital of Guzerat ; which city, together with the whole of the peninsula, fell into the hands of Sultan Mahmood in 1024 ; four years before his death ; 12 miles S.E. of Puttau.

NEHURSDORFF, a town of Bohemia, in the circle of Kaurzim ; 14 miles E. of Prague.

NEIA, a town of Naples, in Calabria Citra ; 8 miles S.W. of Bisignano.

NEIDA, a town of the duchy of Stiria ; 9 miles S.E. of Hardeburg.

NEIDAGY, a town of Austria ; 8 miles W.S.W. of Sonneberg.

NEIDEK, a town of Bohemia, in the circle of Elnbogen ; 8 miles S. of Joachimsthal.

NEIDENAU, a town of Wurtemberg, on the Jaxt ; 9 miles N. of Heilbronn.

NEIDENBURG, a town of Prussia, in the province of Oberland ; 80 miles S. of Königsberg. N. lat.  $53^{\circ} 12'$ . E. long.  $20^{\circ} 23'$ .

NEIDENSTEIN, a town of Germany, in the principality of Hesse ; 9 miles S.W. of Cassel. N. lat.  $51^{\circ} 12'$ . E. long.  $9^{\circ} 15'$ .

NEIFALEN, a town of Austria ; 10 miles S.S.E. of Aigen.

NEIFE, NATIVA, in our *Ancient Customs*, a bond-woman, or the villain, born in one's house. 9 Rich. II. cap. 2.

Anciently, lords of manors sold, gave, or assigned their neifes, and natives. See SLAVE, VILLAIN, &c.

NEIFFEN, or NEUFFEN, in *Geography*, a town of Wurtemberg ; 17 miles S.S.E. of Stuttgart. N. lat.  $48^{\circ} 32'$ . E. long.  $9^{\circ} 25'$ .

NEIFTY, *Writ of*, in our *Ancient Customs*, is an ancient writ, whereby the lord claimed such a woman for his niece.

NEILSVILLE, in *Geography*, a town of America, in Tazewell county, Virginia ; 342 miles W. from Washington.

NEIMPHY, a town of Meckley ; 96 miles S.S.E. of Munnypour.

NEINJUSTE *Vexes*, in *Law*, a writ founded on *Magna Charta*, cap. 10. which lies for a tenant in fee simple against the lord forbidding him to distrain on the tenant for more service than he ought to perform ; particularly when he has formerly prejudiced himself by doing or paying more than he needed.

NEIR *ibn Marend*, in *Geography*, a town of Arabia, in

the province of Nedsjed or Neged ; 110 miles N.E. of Mecca.

NEIRA, one of the Banda islands, the first in rank and seat of government, with a spacious and commodious harbour, but difficult of access ; in which ships anchor under two forts. Its annual supply is about 8000 pounds of nutmegs, and 2000 of mace. In this island are two towns, one of its own name, and the other called Labetacka. S. lat.  $4^{\circ} 8'$ . E. long.  $130^{\circ} 37'$ .

NEISAPOUR, NESSAPOUR, or *Nisabur*, a town of Persia, in the province of Chorasan, which was destroyed, with a dreadful slaughter of its inhabitants, by Jenghiskhan ; 150 miles N.W. of Herat. N. lat.  $36^{\circ} 20'$ . E. long.  $57^{\circ} 10'$ .

NEISCHLOT, a town of Russia, in the government of Viborg, on the lake Saima ; 40 miles N. of Viborg. N. lat.  $65^{\circ} 15'$ . E. long.  $28^{\circ} 24'$ .

NEISIG, a town of Bavaria, in the bishopric of Bamberg ; 15 miles N. of Bamberg.

NEISS, a river of Westphalia, which runs into the Emmer, four miles S.S.E. of Blomberg, in the county of Lippe.

NEISSE, or NEYSSE, a principality of Silesia, sometimes called "the principality of Grotkau." This principality, which is environed by those of Munsterberg, Brieg, Oppeln, and Jagerndorf, as well as Moravia and the county of Glatz, is one of the largest in Silesia. The southern part is hilly ; but the northern part, being less mountainous, is more fertile. Good horses are bred in the Neisse and Grotkau circles. The latter also yields tobacco, and the former has several iron mills. The largest river is the Neisse, but the principality comprehends eleven cities. It belongs to the king of Prussia ; but that part which is contiguous to Moravia is annexed to the crown of Bohemia. Though Grotkau is neither a duchy nor principality, yet the bishop of Breslau is usually styled prince of Neisse, and duke of Grotkau ; and by virtue of this principality takes rank of all the other places in Silesia.

NEISSE, or *Neyse*, a city of Silesia, and capital of the above principality. It is a very strong place, and is situated on the river Neisse, on the opposite side of which is a Prussian fort, erected in 1743. The king appoints a governor and commandant : but the prince and bishop possess the palace, with a treasury, a court of justice, a demesne, and a consistorial office. After the peace of Dresden, a new suburb was added to the old ones that were rebuilt, called Friedrichstadt, lying between Prussia fort and the Neisse, in which is held a court, in his majesty's name ; 42 miles S. of Breslau. N. lat.  $50^{\circ} 22'$ . E. long.  $17^{\circ} 13'$ .

NEISSE, a river which rises in the N. part of Bohemia, and after passing through Lusatia and by several towns, enters the Oder about 12 miles N.E. of Guben.

NEISTIFT, a town of Austria ; 16 miles S.E. of Steyr.

NEISTRIFT, a town of Austria ; 8 miles S.W. of Sonneberg.

NEITH, in *Mythology*, the name of Minerva in Egypt.

NEITRA, in *Geography*, a town of Hungary, on a river of the same name, the capital of a country, and the see of a bishop.

NEITERSOAK, an island near the W. coast of Greenland. N. lat.  $63^{\circ} 22'$ . W. long.  $49^{\circ} 20'$ .

NEIVANSKOI, a town of Russia, in the government of Ekaterinburg, on the Neiva, which runs into the Tura : this town has considerable iron works ; 40 miles W. of Turinsk.



NEKAUIKBAN, a town of Persian Armenia; 39 miles S.E. of Erivan.

NEKEEL, a town of Egypt, on the left bank of the Nile; 4 miles S.S.E. of Aboutige.

NEKKADE', or NEGUADA, a town, sometimes called a city, but rather a village, of Upper Egypt, on the W. bank of the Nile; almost entirely peopled by Copts, among whom are some Catholics, and the see of a Coptic bishop. The Catholics have here a vicar, and two monks of the order of Recollects. This place has some manufactures of blue or striped cloth, of which they make an article of trade, that diffuses some degree of affluence among the inhabitants.

NEKKE', a town of Egypt, on the left bank of the Nile; 4 miles S. of Momslot.

NEKOUBAN LAKE, a lake of Canada; 24 miles N.W. of Quebec. N. lat.  $49^{\circ} 55'$ . W. long.  $75^{\circ}$ .

NEKRESE', a town of Asia, in the principality of Georgia, and province of Kaketi; 65 miles N.E. of Teflis.

NEKSHAB, or KARSBI, a town of Grand Bucharia; 60 miles E. of Bukhara. N. lat.  $39^{\circ} 5'$ . E. long.  $63^{\circ} 40'$ .

NELANJENUM, in *Natural History*, the name of a curious and peculiar fossil substance, found in the East Indies.

It has much the appearance of some of our steel-grained lead ores, and is very ponderous, but it does not contain any lead; in this it approaches to the nature of that substance common in Europe, and called blende, or mock-lead; but this last is foliated, and resembles the plated lead ores, whereas this resembles the close ground ores. It is found in the beds of rivers in many places; they calcine it, and reducing it to powder, mix it with the juice of herbs, and use it in ulcers.

NELCYNDA, in *Ancient Geography*. See NELISURAM. —Also, a town of Arabia, near the mouth of the Red sea; said by Arrian to have been a commercial place.

NELEVANGOLE, in *Geography*, a town of Hindoostan, in Myfore; 15 miles N.W. of Bangalore.

NELGOOND, a town of Hindoostan, in Vissapour; 30 miles W. of Baddammy.

NELISURAM, formerly *Nelcynda*, a town of Hindoostan, and capital of a small country on the W. coast, S. of Canara. This town and district were ceded to Great Britain in 1799; 33 miles N.E. of Mangalore. The fort of Nelisuram is situated on a river named Cangenecora, whose course is from the N.E. and falls in about four miles to the north of mount Della. This Nelisuram, which is situated about 12 miles up the river, is considered by major Rennell as the place meant by Nelcynda, and Melcynda by Pliny and Ptolemy; a place visited by the Egyptian and Roman ships. N. lat.  $12^{\circ} 20'$ . E. long.  $74^{\circ} 57'$ .

NELITRIS, in *Botany*, a name given by Gærtner to the *Decaspermum* of Forster, and apparently derived from *νεν*, expressing privation, and *ελυτρειν*, the case of a seed, because the absolute want of partitions in the berry, to separate the seeds, is said to be one of its chief distinctions from *Guaiava*, or *Psidium*. Gærtner. v. i. 134. t. 27: The propriety of changing Forster's original name does not appear. Subsequent authors have, like sir Joseph Banks and Dr. Solander, referred the plant in question to *PSIDIUM*; see that article.

NELLA CORVINDUM, in *Mineralogy*. See ADAMANTINE SPAR.

NELLEMBI, or NILEMBY-NEUR, in *Geography*, a town of the island of Ceylon, about six or seven miles S. of Candy, which has occasionally afforded a retreat to the

king, and in which he has a palace and store-houses. N. lat.  $7^{\circ} 25'$ . E. long.  $80^{\circ} 50'$ .

NELLENBURG, a landgraviate of Germany, which consisted formerly of the towns and prefectures named from it, viz. Stockach, Aach, and Thengen, and contained about 30 boroughs, villages, and a district 32 miles in circuit. The landgraviate, diminished by the dismemberment of Thengen, and deprived of the land-court which is held at Stockach, is governed by a landvogt; and it has its name from Nellenburg, a town with a citadel situated on a mountain, 16 miles N.W. of Constance.

NELLER, GEORGE CHRISTOPHER, in *Biography*, a learned German writer on ecclesiastical antiquities, and on the science of medals, was born in Franconia in the year 1709. He attained to some considerable rank in the church, and became canon of St. Simeon's at Treves, privy-counsellor to the prince-elector, and doctor of laws. He excelled in the knowledge of ancient monuments and medals, of which he had amassed a fine collection; but his celebrity rests on his various publications, which consist of dissertations that display great learning and laborious research, but not without paradoxical notions. He died at Treves in 1783. The titles of a great number of his works are given in the General Biography, to which we refer our readers.

NELLIPILLY, in *Geography*, a town of Hindoostan, in the circle of Rajamundry, situated on the coast; 30 miles S.E. of Rajamundry.

NELLON, in *Botany*, a name given by some to rice. It is an Indian word, and properly signifies the grain of rice taken off from the stalks, but covered with its proper pellicle. The first operation to be performed upon this, is the beating it with large stones, or other more manageable tools, till this skin flies off. Then it is to be dried in the sun, and, after that beat a second time, to get off its thin, internal, reddish coat: when this is done it is in a state to be used, and it is then only that the Indians call it *arisi*, the word from which we formed our word rice.

NELLORE, in *Geography*, a town and fortress of Hindoostan, in the Carnatic, near the Pennar river, and within 16 miles from the sea; 85 miles from Madras. N. lat.  $14^{\circ} 26'$ . E. long.  $79^{\circ} 57'$ .

NELLY, a town of Hindoostan, in Mysore; 34 miles S. of Harponelly.

NELSON, ROBERT, in *Biography*, an excellent divine of the church of England, was the son of a considerable Turkey merchant, and born at London in the year 1656. He received the early part of his education at St. Paul's school, after which he was taken home by his mother, the father being dead, and placed under the private tuition of the learned Dr. Bull, at that time rector of Suddington, near Cirencester, Gloucestershire. At a proper age he was sent to Cambridge, and admitted a fellow-commoner of Trinity college. Here he secured the esteem and affection of all who knew him; and on one of his visits to London he became acquainted with Dr. (afterwards archbishop) Tillotson, and from the congeniality of their characters and dispositions, a close friendship took place between that celebrated divine and Mr. Nelson, which was only dissolved by the death of the former. In the year 1680, Mr. Nelson was chosen fellow of the Royal Society, and, being anxious to obtain the improvement which a residence in foreign countries is calculated to afford, he set out for Paris with his friend and school-fellow Dr. Halley. On their road to that city, they saw the remarkable comet which gave rise to sir Isaac Newton's "Astronomy of Comets," and to Dr. Halley's "Synopsis Cometarum." While he continued at Paris he had an invitation to undertake an office at the court of Charles II.



of England, which he declined, on account of the aversion which his mother and other friends had for it. From Paris the travellers passed to Rome, where they separated, and Mr. Nelson, after completing what is called the grand tour, returned to England in the summer of 1682. At Rome he met with the widow of sir Kingsmill Lucy, bart., second daughter of the earl of Berkeley; a mutual affection took place between them, and he married her soon after their arrival in England. Some time after this union had taken place, the lady acquainted her husband with what she had previously concealed from him, viz. that she had become a convert to the Roman Catholic religion. This change in her religious sentiments had been effected by her conversations at Rome with cardinal Howard, grandson of the earl of Arundel, collector of the Arundelian marbles, who had been raised to that high dignity by pope Clement X. Lady Nelson having once avowed an adherence to the Catholic faith, became a zealous advocate for the papal doctrines, made a convert of her daughter, by her former husband, and entered into the lists of controversy, and is supposed to have written a piece, published in 1686, under the title of "A Discourse concerning a Judge of Controversy in Matters of Religion, shewing the Necessity of such a Judge." Mr. Nelson was filled with grief when he learnt of the dereliction of his lady from the principles of the Protestant faith, and made every effort in his power to reclaim her, but his attempts, as well as those of his friends Tillotson and Hickes, were unavailing. The former, however, wrote a long letter to her on the subject, and the latter, on her account, published his collection of "Letters," which passed between him and a Popish priest in 1675. In this collection is a letter to an English priest of the Roman communion at Rome, which was written by Mr. Nelson for his lady's use. It was very similar to a view which he took of the same subject in 1687, in a piece entitled "Transubstantiation contrary to Scripture: or the Protestant's Answer to the Seeker's Request." Lady Nelson, notwithstanding all the pains taken to bring her back to the church of England, continued in the Popish communion till her death. She was a person of fine understanding, and had cultivated her mental powers with great care and success. Dr. Tillotson not only lamented the loss of this lady from his own church, but probably dreaded that the influence which she had over her husband's mind might wean him from the faith in which he had been educated. He, however, continued steady to his principles, though he travelled in foreign countries with his lady for the sake of her health, where the temptations to abandon the Protestant religion must have been much stronger than they could have been at home. In 1691 Mr. Nelson returned with his lady, entirely dissatisfied with the revolution that had taken place in the government three years before, and with a determination not to transfer his allegiance from king James. To that prince he shewed his steady attachment while he resided at Florence, by keeping up a correspondence with the earl of Melfort, ambassador from the exiled James to the pope, and he now avowed himself a nonjuror, and withdrew from the communion of the church of England. His conduct in this particular did not disturb the friendship that subsisted between him and archbishop Tillotson, whose death-bed he sedulously attended, and who at length expired in his arms. After that event he continued his kindness to his grace's widow, and was very instrumental in procuring her pension from the crown to be augmented from 400*l.* to 600*l.* *per ann.* As he now resided in or near the metropolis, a coincidence of opinions led him to form an acquaintance with Mr. Kettlewell, who appointed him sole executor and trustee to his last will, and in pursuance of that trust Mr. Nelson

published some posthumous pieces of that worthy divine, with particulars of his life and character; and it was by the persuasion of this gentleman that he took up his pen in the service of piety and devotion. The principal works of Mr. Nelson are his "Companion for the Festivals and Fasts of the Church of England, &c." which has been exceedingly popular, and has passed through 20 or 30 editions: "The great Duty of frequenting the Christian Sacrifice:" "The Practice of true Devotion, in relation to the End, as well as the Means of Religion, with an Office for the Holy Communion." Mr. Nelson for many years adhered to the communion of those bishops who had been deprived of their sees by the revolution, but upon the death of Dr. Lloyd, bishop of Norwich, in 1709, the last of that number, except Dr. Kenn, he joined in communion with the church established by law. Mr. Nelson died at Kensington in January 1714—15, in the fifty-ninth year of his age. He left his whole fortune to pious and charitable purposes, to which he had devoted a great part of his income during life. He was author of many other pieces besides those already noticed, of which may be mentioned "The Life of Dr. George Bull, bishop of St. David's, with the History of the Controversies in which he was engaged, &c.:" also "The Scripture Doctrine of the most holy and undivided Trinity, vindicated from the Misrepresentations of Dr. Clarke." Biog. Brit.

NELSON, HORATIO, *Lord Viscount*, one of the bravest and most successful naval commanders that ever appeared in the world, was the fifth son of the Rev. Edmund Nelson, rector of Burnham Thorpe, in Norfolk, in which county the family of Nelson had long been resident. His lordship's grandfather was rector of Hilborough, in the same county, of which living the family of the Nelsons have been for a great length of time the patrons. His father married, in May 1749, Catherine, daughter of Maurice Suckling, D.D., by whom he had eight sons and three daughters.

Horatio, the subject of the present article, was born on Michaelmas day 1758, in the parsonage-house of Burnham Thorpe. He was first sent to the high-school of Norwich, from whence he was afterwards removed to North Walsham. During the Christmas holidays of 1770, he read in the newspaper that his uncle, captain Maurice Suckling, was appointed to the *Raisonable* of 64 guns. Young as he then was, it is said he felt a desire of relieving his father from the burden of supporting him; and it was the thought of providing for himself that actuated him in the request that he now made: "Do, brother William," said he, "write to my father, and tell him, I should like to go to sea with uncle Maurice." Mr. Nelson did not oppose the plan, but wrote to his brother-in-law, who had, previously to this, promised to provide for one of his nephews in his own profession; but this was not the lad he would have chosen, on account of the extreme delicacy of his constitution. "What," said he, in his reply, "has poor Horace done, who is so weak, that he, above all the rest, should be sent to rough it out at sea? But let him come, and the first time we go into action, a cannon ball may knock off his head, and provide for him at once." In the spring of 1771, his father sent him to join the ship, then lying in the Medway. When he got on-board, captain Suckling had not joined, and the child, then but just turned of twelve years of age, paced the deck almost a whole day without being noticed by any one. "The pain," says one of lord Nelson's biographers, "which is felt when we are first transplanted from our native soil, when the living branch is cut from the parent tree, is one of the most poignant that we have to endure through life. There are after-griefs which wound more deeply, which leave behind them fears never to be effaced, which



which bruise the spirit, and sometimes break the heart; but never do we feel so poignantly the want of love, the necessity of being loved, the sense of utter desertion, as when we first leave the haven of home, and are, as it were, pushed off upon the stream of life. Added to this, the sea-boy has to endure physical hardships, the privation of every comfort, even of sleep. Nelson had a feeble body and an affectionate heart, and he remembered through life his first days of wretchedness in the service." The Reasonable, by the termination of the dispute with Spain respecting the Falkland islands, was soon paid off, and captain Suckling was appointed to a guard-ship in the Medway. This he considered as too inactive a service for his nephew, and accordingly sent him in a merchant-ship to the West Indies, under Mr. Rathbone, who had formerly been master's mate with him in the Dreadnought. On his return from this voyage, he was received by his uncle on board the *Triumph*, then lying at Chatham, in the month of July 1772. His voyage to the West Indies, in the merchant service, had given the youth a good practical knowledge of seamanship; but it appeared that he had acquired an entire horror of the royal navy. Captain Suckling beheld with the utmost anxiety and distress the prejudices of his nephew, and at first attempted to win him over, by working upon his ambition, a principle which he possessed in an eminent degree, of becoming an excellent and thorough-bred seaman. It was accordingly held out to the youth, that if he attended to his duty, he should be permitted to go in the cutter and decked long-boat, which was attached to the commanding officer's ship at Chatham. This operated on the mind of young Nelson as it was wished; and the consequence resulting from it was, that by degrees he became an excellent pilot for vessels of that class, which failed from Chatham to the Tower of London, and also down the Swin Channel, and to the North Foreland. In each subsequent trial of navigating difficult passages, or dangerous coasts, he became more and more equal to the task, and felt that confidence within himself which afterwards was a great comfort to him, and which essentially forms and establishes a great and undaunted mind.

In the following spring, an expedition of discovery towards the north pole was sent out under captain Phipps, in consequence of an application from the Royal Society; and though, on account of the extreme difficulty of the service, it was ordered that no boys should be received on board, yet the enterprising mind of Horatio Nelson anxiously solicited to be appointed coxswain to captain Lutwidge of the *Carcass*. The captain, struck with the unsubdued spirit which he displayed, admitted him to the office after which he aspired. During the expedition, captain Phipps, afterwards lord Mulgrave, took particular notice of the youthful coxswain, and formed that high opinion of his character, which his subsequent conduct has more than justified. The two vessels, on the 31st of July, were in a most perilous situation, off the Seven islands, which is a cluster in the Northern Frozen ocean, situated in 80° N. lat., and nearly 19° E. long., from becoming suddenly fast amidst immense fields of ice. The labour of the whole ship's company to cut away the ice proved ineffectual: their utmost efforts, for a whole day, could not move the ships above 300 yards. In this dreadful state they continued nearly five days, during which the young coxswain, after much solicitation, obtained the command of a four-oared cutter with twelve men; and he took pride in imagining he could navigate her better than any other boat in the service.

Soon after his return, his uncle recommended him to captain Farmer of the *Sea-Horse*, of 20 guns, then going

to India, in a squadron under sir Edward Hughes. In this ship young Nelson was stationed to watch in the fore-top, whence, in due time, he was placed on the quarter-deck. The master soon perceived that he was extremely desirous to make himself acquainted with the minutest parts of a seaman's duty, and particularly recommended him to the captain, who rated him as a midshipman. The service which he went through strengthened his constitution, and he seemed stout and athletic; but in India he caught one of those malignant diseases which are frequently so fatal to European habits: it totally deprived him for a time of the use of his limbs, and nearly brought him to the grave. In consequence of this, he returned to Europe with captain Pigot, in the *Dolphin*, 1776, in such a state of weakness that his life was despaired of; and he attributed the preservation of it, at this period, to the kindness of that officer. He had, during this voyage, formed an acquaintance with Thomas (afterwards sir) Trowbridge, and other distinguished officers, who, like himself, were entering upon their career of glory, and had left them pursuing it full of health and enjoyment, while himself was returning with a body broken down by sickness, and spirits dreadfully depressed. Long afterwards he spoke, almost with horror, of the feelings which he at that time endured. "I felt oppressed," said he, "with an idea that I should never rise in my profession. My mind was staggered with a view of the difficulties which I had to surmount, and the little interest I possessed. If, at a moment, I felt the emulation of ambition, I shrunk back, as having no means within my power of reaching the object of my wishes. After a long and gloomy reverie, in which I almost wished myself overboard, a sudden glow of patriotism was kindled within my breast, and presented my king and country as my patrons. Well then, I exclaimed, I will be a hero, and, confiding in Providence, I will brave every danger." From that hour his despondence was changed into hope, and, as he told captain Hardy, a radiant orb was suspended before his mind's eye, which urged him on to renown. Nelson, says his biographers, spoke of these aspirations of his youth as if they had in them a character of divinity, as if

"The light which led him on,  
Was light from heaven."

His fits of dejection, though not unnatural to a great mind, were, as we shall see, altogether causeless: his prospects were fair, and his progress almost as rapid as it could possibly be. When he reached England, he found his uncle comptroller of the navy, and was immediately appointed to act as fourth lieutenant of the *Worcester* of 64 guns, captain Mark Robinson, then on the point of sailing with a convoy to Gibraltar; and he was at sea from this time, September 1776, to the beginning of April of the next year: and though he had not yet completed his 18th year, captain Robinson placed the most unlimited confidence in him, and declared that he felt equally easy during the night, when it was Nelson's watch, as when the oldest officer on board had charge of the ship. Mr. Nelson was passed as lieutenant on the 10th of April 1777, and the next day received his commission as second of the *Lowestoffe*, 32 guns, captain William Locker. During his examination, captain Suckling sat at the head of the table, and when it had ended in a manner most honourable to him, he introduced him to the other members of the board as his nephew. The examining captains expressed their surprise that he had not apprised them of this relationship before. "No," replied the comptroller, "I did not wish the younger to be favoured: I felt convinced that he would pass



a good examination, and you see I have not been disappointed." In the *Lowestoffe* he arrived at Jamaica, but finding that even a frigate was not sufficiently active for his ardent mind, he solicited an appointment to the command of a schooner, tender to the *Lowestoffe*; and in this small vessel he eagerly availed himself of the opportunity of becoming a complete pilot for all the intricate passages through the keys, situated north of Hispaniola. During Mr. Nelson's continuance in the *Lowestoffe*, she captured, in a strong gale of wind and a heavy sea, an American letter of marque. The captain ordered his first lieutenant to board her, which he instantly attempted, but was unable to effect, owing to the tremendous sea. On his return to the ship, the captain exclaimed, "Have I then no officer who can board the prize?" On hearing this, the master immediately ran to the gang-way, in order to jump in the boat, when lieutenant Nelson suddenly stopped him, saying, "It is my turn now; if I come back, it will be yours." He no doubt had made up his mind not to return, unless he first accomplished his object; and the circumstance strongly prefigured his future character. He probably never saw a difficulty, in the course of his service, that he did not surmount; and, as it afterwards appears, the greater the obstacles with which he had to contend, the better was he pleased with the nature of his duty. After a year's active service, he was removed to the *Bristol*, the flag-ship of sir Peter Parker; and under this commander he finished his services as a lieutenant. It is observable that the late lord Collingwood, who succeeded to the command so many years afterwards, upon his glorious death, succeeded him now in the *Lowestoffe*, and again in the flag-ship, when, on the 8th of December, the same year, he was made commander in the *Badger* brig, at the age of 21. While captain Nelson commanded the *Badger*, his majesty's ship *Glasgow*, captain Thomas Lloyd, lying near, took fire from a cask of rum; but by the unceasing exertions and presence of mind of Nelson, the whole crew was saved from the flames.

Captain Nelson obtained his rank of post-captain on the 11th of July 1779; and during nine years that he had been in service, he had, by keen observation, and incessant application to every part of his known duty, not only become an able officer, but had likewise laid the foundation for forming a most skilful and successful pilot. This seems indeed, as has been already observed, from the first, to have been his constant ambition. After his advance to post rank, he was appointed to the *Hinchinbroke*, of 28 guns. On the arrival of count D'Estaing at Hispaniola, with a numerous fleet and army from Martinique, an attack upon Jamaica was expected. In this situation of the island, Nelson was entrusted, both by the admiral and general, with the command of the batteries at Port-Royal. This was the most important post in the whole island, as being at once the key to the naval force of the town of Kingston, and to the seat of government at Spanish Town. A plan was next formed for taking fort San Juan, on the river St. John, in the gulf of Mexico; and captain Nelson was appointed to the command of the naval department. His business was to have ended when he had convoyed the forces, about 500 men, from Jamaica to the Spanish main; but it was found, that not a man of the whole party had ever been up the river: he therefore displayed his usual intrepidity, quitted his ship, and superintended the transporting of the troops, in boats, 100 miles up a river which, since the time of the Buccaneers, none but Spaniards had ever navigated. Of all the services in which he had been engaged, this was the most perilous. It was the latter end of the dry season: the river was low, full of shoals, and sandy beaches; and the

men were often obliged to quit the boats, and drag them through shallow channels, in which the natives went before to explore. This labour, and that of forcing the rapids, were chiefly sustained by the sailors; men at all times accustomed to rely on their own exertions, and at all times sure to do their duty. Seven or eight hours during the day they were exposed to a burning sun, rendered more intolerable by being reflected from dry shoals of white sand; and at night their sufferings were not less severe, owing to the heavy dews that fell in that climate. On the 9th of April they arrived at a small island, called St. Bartholomew, which commanded the river in a rapid and difficult part, and was defended by a battery mounting nine or ten swivels. Nelson, according to his own phrase, resolved to board this out-post. Putting himself at the head of a few sailors, he leaped on the beach. Captain Despard, since driven to desperation, crimes, and an ignominious end, by neglect and ill usage, gallantly supported him; and they stormed the battery, and fought and defeated the Spaniards with their own guns. Two days afterwards they came in sight of the castle of San Juan, and began to besiege it on the 13th: it surrendered on the 24th. Before that time they had a more formidable enemy to encounter, and against which even the prowess of a British sailor is of no avail. The bad weather had set in: sailors, soldiers, and Indians, sunk alike under it; the latter from exertions to which they had never been accustomed, and the Europeans from the deadly effects of a climate allotted by the distribution of nature to a race of different colour and complexion. All that victory procured them was a cessation from toil: no supplies were found, and the castle itself was worse than a prison. The hovels, which were used as an hospital, were surrounded with putrid hides; and when orders were obtained from the commander-in-chief to build one, the sickness had become so general, that there were no hands to work at it. The rains continued, with few intervals, from April to October, when they abandoned their baneful conquest. Of 1800, who were sent to different posts upon this ill-fated scheme, only 380 returned. Nelson narrowly escaped. His advice had been to carry the castle by assault; instead of which, eleven days were spent in the formalities of a siege. He returned before its surrender, exhausted with fatigue, and suffering under a dysentery; yet to him the commander-in-chief ascribed the principal cause of success in reducing fort Juan, in which were found one brass mortar of five inches and an half, twenty pieces of brass ordnance mounted, besides swivels, ten or twelve ditto dismounted, with a proportionable quantity of military stores. From the extreme fatigue which captain Nelson endured on this expedition, his health became visibly impaired; but he fortunately received an appointment to the *Janus* of 44 guns, vacant by the death of captain Glover, son to the author of *Leonidas*. This promotion removed him from the fatal station just in time, and he reached Jamaica in such a state of sickness, that he was carried to his cot. The careful attention of a good old negress, and afterwards that of sir Peter Parker and his lady, saved his life; but his health had suffered so much and so severely, that he was soon compelled to return to England, which he did in the *Lion*, commanded by the Hon. William Cornwallis, through whose attention a complete recovery was effected.

In the month of August 1781, captain Nelson was appointed to the command of the *Albemarle* of 28 guns, and sent into the North sea. During this voyage he gained a considerable knowledge of the Danish coast, and its soundings; a knowledge which afterwards proved of great importance to his country. On his return, he was ordered to



Quebec with a convoy, under the orders of captain Thomas Pringle. Here he became acquainted with Mr. Alexander Davison, who saved him from an imprudent marriage. Nelson was about to quit the station, had taken leave of his friends, and had gone down the river to the place where men of war usually anchor: nevertheless, next morning, as Mr. Davison was walking on the beach, he saw him coming back in his boat. He could not, he said, leave Quebec, without offering himself and fortune to the woman he loved. Davison remonstrated with him, and shewed that his utter ruin must of necessity follow such a step. "Then let it follow," was his reply; "for I am resolved to do it." His friend was, however, equally resolute that he should not; and after some disputes, Nelson consented to return to his ship.

Captain Nelson sailed from Quebec with a convoy to New York, in the month of October 1782, at which place he joined the fleet, under the command of sir Samuel Hood. Here he became acquainted with prince William Henry, the present duke of Clarence, who was at that time serving as midshipman in the *Barfleur*, under sir Samuel Hood. "I had," says his royal highness, "the watch on deck, when captain Nelson came in his barge along-side, who appeared to be the merest boy of a captain I ever beheld; and his dress was worthy of attention. He had on a full laced uniform; his lank unpowdered hair was tied in a stiff Hessian tail, of an extraordinary length: the old-fashioned flaps of his waistcoat added to the general quaintness of his figure, and produced an appearance which particularly attracted my notice; for I had never seen any thing like it before, nor could I imagine who he was, nor what he came about. There was, however, something irresistibly pleasing in his address and conversation, and an enthusiasm, when speaking on professional subjects, which shewed that he was no common being." In November he sailed with sir Samuel Hood to the West Indies, where he continued actively employed till the peace. By the commander-in-chief, Nelson says he was treated as if he were his son: "nor is my situation with prince William less flattering. Sir Samuel was kind enough to tell his royal highness, that if he wished to ask questions relative to naval tactics, I could give him as much information as any officer in the fleet. He will, I am certain, be an ornament to our service. He is a seaman, which you could hardly suppose: every other qualification you may expect from him; but he will be a disciplinarian, and a strong one." When Nelson was ordered back to England, he was directed, in his way, to attend his royal highness prince William on a visit to the Havanna. On his arrival, the *Albemarle* was paid off at Portsmouth, on the 31st of July 1783. During the autumn of this year, captain Nelson went to France, where he continued till the spring of the year 1784, when he was appointed to the command of the *Boreas* frigate, 28 guns, and was ordered to the Leeward islands. While his vessel was at anchor in Nevis road, a French frigate passed to the leeward, close along shore. Nelson had received information that this frigate was sent from Martinico, for the purpose of making a survey of our West India islands. This he was determined to prevent. Accordingly he followed her to St. Eustatia, and being invited by the Dutch governor to meet the French officers at dinner, he took that opportunity of assuring the captain, that understanding it was his intention to honour the British possessions with a visit, he had taken the earliest opportunity in his power to accompany him in his majesty's ship the *Boreas*, in order that such attention might be paid to an officer of his most Christian majesty, as every Englishman would be proud to shew. The French, with equal politeness,

protested against giving him this trouble; but Nelson insisted upon paying them this compliment, followed them close, in spite of all attempts to elude his vigilance, and never lost sight of them, till finding it impossible either to deceive or escape him, they gave up their intention in despair, and beat up to Martinico.

This station, moreover, opened a new scene to the officers of the British navy. The Americans, when colonists, possessed almost the whole of the trade from America to our West India islands; but on the return of peace, and when their independence was acknowledged, they forgot that they were then to be considered as having no more privileges in this trade than foreigners. The governors and custom-house officers pretended, that by the *NAVIGATION ACT* (which see), the Americans had a right to trade. He knew the meaning of that act as well as they, and though the commander-in-chief was disposed to wink at this commerce, he addressed a letter to the governor of the Leeward islands on the subject, who, in reply, told him that old generals were not in the habit of taking advice from young gentlemen. Nelson, in answer to this, said, "Sir, I am as old as the prime minister of England, and think myself as capable of commanding one of his majesty's ships, as that minister is of governing the state." He accordingly shewed that he could act for himself, and, in defiance of the judgment of those who thought themselves his superiors, ordered all the American vessels to quit the islands in forty-eight hours; declaring, that if they refused, or hesitated, or presumed to land their cargoes, he would seize them. The Americans, supported by the governors of the islands, did resist; and the admiral, unwilling to take an active part on either side, advised captain Nelson to be guided by the wishes of the presidents of the council. With respect to this advice of sir Richard Hughes, he said within himself, "I must now disobey my orders, or disobey acts of parliament: I determined on the former, trusting to the uprightness of my intentions, and believing that my country would not allow me to be ruined by protecting her commerce." He wrote to the admiral, and in very respectful language told him, he should decline obeying his orders till he had an opportunity of seeing and conversing with him. The first feelings of sir Richard Hughes were those of anger, and he determined to supersede Nelson; but having mentioned the business to his own captain, the latter told him, he believed all the Squadron thought he had issued illegal orders, and therefore did not know how far they were bound to obey him. The admiral submitted, and even thanked Nelson for having shewn him his error. At Nevis the *Boreas* found some American vessels deeply laden, with the colours of the island flying. They were ordered to hoist their proper flag, and leave it in eight-and-forty hours. At first they denied their country, and refused to obey; but upon being examined before the judge of the admiralty, they admitted that they were Americans, and that their vessels and cargoes were wholly American property. Upon this, Nelson seized them. Actions were brought against him, and the damages laid at 40,000*l.*: he, however, triumphed, and the four ships and their cargoes were condemned. While the affair was pending, he sent a memorial to the king; in consequence of which, orders were forwarded to defend him at the expence of the crown: and upon the representation which he made at the same time to the secretary of state, the Register Act was framed. The treasury, upon this occasion, and certainly without much reason, transmitted thanks to sir Richard Hughes, and the officers under him, for their activity and zeal in protecting the commerce of Great Britain. Nelson felt indignant at their conduct: he, indeed, had protected the commerce of his country, in op-



position to the opinion and the express *advice*, which in military language always means *order*, of sir Richard; and yet Nelson was passed over, and the admiral applauded. "I feel hurt," said the high-minded captain, "that after the loss of health, and the risk of my fortune, another should be thanked for what I did, and against his orders. I either deserved to be sent out of the service, or at least to have had some little notice taken of what I had done. They have thought the act worthy of notice, but they have neglected me."

From the month of July 1786, till June 1787, captain Nelson continued at the Leeward islands, when at length he sailed for England. He had, during his stay in this quarter of the world, become acquainted with Mrs. Nisbet, the widow of Dr. Nisbet of the island of Nevis, then only in her eighteenth year, and married her on the 11th of March 1787, prince William Henry standing father on the occasion. On his return to England, the *Boreas* frigate was for nearly five months kept at the Nore, as a sloop and receiving ship; a circumstance that roused the indignation of its commander. During the whole time, captain Nelson scarcely ever quitted the ship, but was observed to carry on the duty with a strict but sullen attention. When orders were received for his ship to be paid off at Sheerness, he expressed his joy to the senior officer in the Medway, saying, "It is my determination never again to set my foot on board a king's ship. Immediately after my arrival in town, I shall wait on the first lord of the admiralty, and resign my commission." The officer, finding it in vain to reason with him against this resolution in the present state of his feelings, used his secret interference with the first lord of the admiralty to save Nelson from taking a step so injurious to himself, and which would ultimately have been so mischievous to his country. Lord Howe took the hint, sent for captain Nelson, and having had a long conversation with him, and probably expressed to him, with the feelings of admiration and a warm heart, the obligations that the country and government owed him, desired that he might, on the first levee day, have the honour of presenting him to his majesty. This thing was done: he was most graciously received at court, and the resentment of captain Nelson was effectually removed. He now retired to enjoy the pleasures of domestic happiness at the parsonage-house at Burnham Thorpe, which his father gave him as a place of residence. But the affair of the American captures was not terminated: he had, while amusing himself in his little farm, a notification that he was again to be sued for damages to the amount of 20,000*l*. This circumstance, as unexpected as it was unjust, excited his astonishment and indignation. "This affront," he exclaimed, "I did not deserve; but I will no longer be trifled with. I will write immediately to the treasury, and if government will not support me, I am resolved to leave the country." He accordingly informed the treasury, that unless a satisfactory answer were returned to him by return of post, he would immediately take refuge in France. Mr. Rose replied, that he would assuredly be supported.

In the year 1790, during the armament occasioned by the dispute relative to Nootka sound, captain Nelson offered his services, but they were not accepted. He made similar applications again and again, and with the same success; and he determined to quit the service, at least he assumed this as his resolution; but he did not know himself; he was not aware that it was "his meat and drink" to serve his country; his peace, his comfort, his existence even depended upon his being able to be useful.

On the 30th of January 1793, he was delighted with the appointment to the *Agamemnon* of 64 guns, and was very

soon after placed under the orders of lord Hood, then appointed to command in the Mediterranean. The temper with which Nelson engaged in this war is manifested in the instructions which he gave to one of his midshipmen, probably his son-in-law, Joshua Nesbit. "There are three things, young gentleman, which you are constantly to bear in mind: first, you must always implicitly obey orders, without attempting to form any opinion of your own respecting their propriety (he probably did not recollect his own conduct in the American business); secondly, you must consider every man as your enemy who speaks ill of your king; thirdly, you are to hate a Frenchman as you do the Devil." This was naval morality!

The unbounded confidence which lord Hood always reposed in captain Nelson, manifests the high opinion which he entertained not only of his courage, but of his talents and ability to execute the arduous services with which he was entrusted. If batteries were to be attacked, if ships were to be cut out of their harbours, if the hazardous landing of troops was to be effected, or difficult passages to be explored, we invariably find Nelson foremost on the occasion, with his brave officers, and the gallant crew of the *Agamemnon*. During the time that Nelson had the command of the *Agamemnon*, and previously to the commencement of hostilities with Spain, he put into Cadiz to water; and on beholding the Spanish fleet, exclaimed, "These ships are certainly the finest in the world. Thank God! the Spaniards cannot build men, as they do ships!" It was observed in the Mediterranean, that before captain Nelson quitted his old ship, he had not only fairly worn her out, there not being a mast, yard, sail, nor any part of the rigging, but was obliged to be repaired, the whole being cut to pieces with shot, but had exhausted himself and his ship's company. At Toulon, and the celebrated victories achieved at *Bassia* and *Calvi*, lord Hood bore ample testimony to the skill and unremitting exertions of captain Nelson, "which," said his lordship, "I cannot sufficiently applaud." During the memorable siege of *Bassia*, he superintended the disembarkation of the troops and stores, and commanded a brigade of seamen, who served on shore at the batteries. Lord Hood had submitted to general Dundas, and afterwards to his successor D'Aubert, a plan for the reduction of *Bassia*; but they refused to co-operate, or to furnish a single soldier on the occasion. He obtained only a few artillery-men, and began the siege with less than 1200 soldiers, artillery-men, and marines, and 250 sailors. "We are but few," says the brave Nelson, "but of the right sort; our general not giving us one of the five regiments he has lying idle." They were landed on the 4th of April, under colonel Villettes and Nelson, who had obtained from the army the title of brigadier. The sailors dragged the guns up the heights, which was a work that could probably have been accomplished only by British seamen. The soldiers behaved with the same spirit. "Their zeal," said he, "is, I believe, almost unexampled. There is not a man but considers himself as personally interested in the event; and deserted by their general, it has, I am persuaded, made them equal to double their numbers." "This," says a biographer of Nelson, "is one of many proofs, that to make soldiers equal to our seamen, it is only necessary that they should be well commanded. They have the same heart and soul, as well as the same flesh and blood. Too much may indeed be exacted from them in a retreat; but with their face towards a foe, there is nothing within the reach of human achievement which they cannot perform." The siege continued nearly seven weeks, and on the 19th of May a treaty of capitulation was begun; and on that same evening, and not before, the



the troops made their appearance on the hills; and on the following morning, general D'Aubert arrived with his whole army to take Bastia. The event of the siege had justified the opinion of the sailors; and when the conquest was as good as made, then they had the assistance of the army, which they had solicited before in vain. "I am," said Nelson, when he got possession of the fortrefs, "all astonishment, when I reflect on what we have achieved; 1000 regulars, 1500 national guards, and a large body of Corsican troops, laying down their arms to 1000 soldiers and marines, and 200 seamen." The enemy were supposed to be far inferior in number, when it was resolved to attack the place; and it was not till every arrangement was made, that Nelson received certain information of their great superiority. This intelligence he kept a secret, fearing the attempt would be readily abandoned, if a fair pretext were afforded. The siege of Calvi was carried on by general Stuart, and Nelson had less responsibility here than at Bastia, but the business was equally arduous. He certainly knew the importance of his services, and on no occasion scrupled to set a value upon them. When at Calvi, he said to lord Hood, "We will sag ourselves to death, before any blame shall lie at our doors. I trust it will not be forgotten, that twenty-five pieces of cannon have been dragged to the different batteries, and mounted, and all but three fought by seamen." He was employed full four months on shore, and the climate was more destructive to his health, and to the constitutions of his brave comrades, than the war. Nelson described himself as the reed among the oaks bowing before the storm, when they were laid low. "All the prevailing disorders have attacked me," said the captain, "but I have not strength enough for them to fall on me. One plan I pursue, never to employ a doctor. Nature does all for me, and Providence protects me." It was at the siege of Calvi that he lost an eye; and yet, strange as it must appear, he was altogether overlooked; his name did not even appear among the wounded. "One hundred and ten days," said he, "I have been actually engaged at sea, and on shore, with the enemy: three actions against ships, two against Bastia in my own ship, four boat actions, and two villages taken, and twelve sail burnt. I do not know that any one has done more. I have had the comfort of being always applauded by my commanders-in-chief, but never rewarded: and what is more mortifying, for service in which I have been actually wounded, others have been praised, who, at the time, were actually in bed, and far from the scene of action. They have not done me justice: —but never mind: I'll have a gazette of my own." He lived long enough to taste all the glory that he anticipated.

When lord Hood left the Mediterranean in October 1794, the command devolved on admiral Hotham, who confided in Nelson with the same alacrity as lord Hood had done before; and Nelson again distinguished himself in the actions with the French fleet of the 13th and 14th of March, and also on the 13th of July 1795. Under admiral Hotham, he had occasionally the command of a light squadron of frigates, with which he performed some valuable services; and he was rewarded with a colonelcy of marines. When sir John Jervis, now earl St. Vincent, succeeded admiral Hotham in November 1795, he was too sensible of the merits of captain Nelson to part with him. He raised him to the rank of commodore, and removed him from the *Agamemnon* to the *Captain* of 74 guns; and on the 11th of August he had a captain appointed under him.

From the month of April till October, commodore Nelson was constantly employed in the most arduous services, *viz.* the blockade of Leghorn, the taking of port Ferrajo,

with the island of Caprea, and, lastly, in the evacuation of Bastia: after which, he joined the admiral in St. Florenza bay, and proceeded with him to Gibraltar. While the name of Nelson was hardly known to the English public, it was feared, respected, and highly honoured throughout Italy, and in other parts of the continent. A letter was sent to him, directed, "Honor to Nelson, Genoa." When the writer was asked, how he could address a letter so vaguely? he replied, "There is but one Horatio Nelson in the world." In the letter in which he mentions this circumstance to his lady, captain Nelson says, "Had all my actions been gazetted, not one fortnight would have passed, during the whole war, without a letter from me. One day or other I will have a long gazette to myself. I feel that such an opportunity will be given me. I cannot, if I am in the field of glory, be kept out of sight."

During the month of December 1796, commodore Nelson hoisted his broad pendant on board *La Minerve* frigate, captain George Cockburne, and was dispatched with that ship and *La Blanche* to Porto Ferrajo, to bring the naval stores left there to Gibraltar. On the passage thither, in the night of the 19th, the commodore fell in with two Spanish frigates. He immediately attacked the ship which carried the poop light, and directed the *Blanche* to bear down and engage the other. At forty minutes past ten at night, the commodore brought his ship to close action, which continued without intermission till half past one, when *La Sabina* of 40 guns, and 286 men, commanded by captain Don Jacobo Stuart, struck to *La Minerve*. Captain Preston in *La Blanche* silenced the ship he had engaged, but could not effect possession, owing to three more ships heaving in sight. Commodore Nelson's letter, on this occasion, to his admiral sir John Jervis, has been regarded as a noble example of a generous and modest spirit, inasmuch as he assumes no merit to himself, but gives every praise to the captain, his officers, and crew. "You are, sir," says he, "so thoroughly acquainted with the merits of captain Cockburne, that it is needless for me to express them; but the discipline of *La Minerve* does the highest credit to her captain and lieutenants, and I wish fully to express the sense I have of their judgment and gallantry. Lieutenant Culverhouse, the first lieutenant, is an old officer of very distinguished merit; lieutenants Hardy, Gage, and Noble, deserve every praise which gallantry and zeal justly entitle them to; as does every man in the ship. You will observe, sir, I am sure, with regret, among the wounded, lieutenant James Noble, who quitted the *Captain* to serve with me, and whose merits, and repeated wounds received in fighting the enemies of our country, entitle him to every reward a grateful nation can bestow." In this action, the captured ship had 164 men killed and wounded, and lost the mizen, main, and fore-masts; and *La Minerve* had seven men killed, 34 wounded, and all her masts shot through.

On the 29th of January 1797, commodore Nelson sailed in *La Minerve* from Porto Ferrajo, on his return to sir John Jervis, with a mind irritated and depressed, through the fear that a general engagement would take place before he could join the fleet. He arrived at Gibraltar a few days after the Spanish fleet had passed the straits from Carthage. Impatient to join his admiral, the commodore only remained one day at Gibraltar; and on the 11th of February, while he was proceeding to the westward, to the place of rendezvous, he was chased by two Spanish line of battle ships, and fell in with their whole fleet off the mouth of the straits. He fortunately effected his escape, and joined the admiral off cape St. Vincent, on the 13th of February, just in time to communicate intelligence relative to the force and state of the



the Spanish fleet, and to shift his pendant on board his former ship, the Captain, 74 guns. Before sun-set, the signal was made to prepare for action. At day-break, the enemy were in sight. The British force consisted of two ships of 100 guns each, two of 98, two of 90, eight of 74, and one of 64, with four frigates, a sloop, and a cutter. The Spaniards had one ship of 136 guns, six of 112 guns each, two of 84, and eighteen of 74 guns, with ten frigates. The disproportion was very great, but the Spanish admiral, Don Joseph de Cordova, had reason to believe it was still greater, or he would not have hazarded a battle. He had learnt from an American, that the English had but nine ships on that station, which was actually the case when the American had fallen in with them; and upon this information he sought an engagement, instead of going into Cadiz, as he at first intended, relying with a fatal confidence upon the accuracy of the American.

Sir John Jervis, following the new system of naval tactics, determined to break the line of the enemy; and before the Spanish admiral could form a regular order of battle, of which he seemed very desirous, sir John, by carrying a press of sail, came up with them, passed through the fleet, then tacked, and thus cut off nine of their ships from the main body. These, in their turn, attempted to form on their larboard tack, either with a design of passing through the British line, or to the leeward of it, and thus rejoining their friends. One of the nine only succeeded; the others were so warmly received, that they took to flight, and did not appear in action till the close. The admiral was now enabled to direct his whole attention to the enemy's main body, still superior to his whole fleet. He made signal to tack in succession. Nelson, whose station was in the rear of the British line, perceiving that the Spanish fleet was bearing up before the wind, with an intention of forming their line, joining their separated ships, or flying; determined to prevent either of these schemes from taking effect, and accordingly, without a moment's hesitation, disobeyed the signal, and ordered his ship to be wore. This at once brought him into action with seven of the largest ships of the enemy's fleet, among which were the Santissima of 136 guns, and two others of 112. Captain Trowbridge, in the Culloden, nobly supported him; and the Blenheim, captain Frederick, came to their assistance. The Salvador del Mundo and the San Isidro dropped astern, and were fired into by the Excellent, captain Collingwood, to whom the latter struck. "But Collingwood," says Nelson, "disdaining the parade of taking possession of beaten enemies, most gallantly pushed up with every sail set, to save his old friend and mess-mate, who was to all appearance in a very critical situation." The Captain was at this moment fired upon by three first rates, and the San Nicholas and a 74 were within pistol-shot. The Blenheim was a-head, and the Culloden crippled a-stern: Collingwood ranged, and passed within ten feet of the San Nicholas, giving her a most tremendous broadside, pushed on for the Santissima Trinidad. At this time the Captain had lost her fore-top-mast, had not a sail, shroud, or rope left, her wheel was shot away, and thus left incapable of farther service in the line or the chase; her noble commander, Nelson, instantly resolved on a bold and decisive measure, and determined, whatever might be the event, to attempt his opponent sword in hand; and directed captain Miller to put the helm a-star-board, and the boarders were summoned. "Fortune," says colonel Drinkwater, the animated narrator of this battle, "favours the brave!" nor on this occasion was she unmindful of her favourite. Ralph Willett Miller, the commodore's captain, (who was afterwards in the battle of the Nile, where he

gained great honour, and was slain in the Thefeus, under sir Sidney Smith,) so judiciously directed the course of his ship, that he laid her aboard the star-board quarter of the Spanish 84; her sprit-sail-yard passing over the enemy's poop, and hooking in her mizen shrouds: when the word to board being given, the officers and seamen, destined for this perilous duty, headed by lieutenant (now sir Edward) Berry, (who was afterwards lord Nelson's captain in the Vanguard, in the battle of the Nile,) together with the detachment of the 69th regiment, commanded by lieutenant Pearson, then doing duty on board the Captain, passed with rapidity on board the enemy's ship, and in a short time the San Nicholas was in possession of her intrepid assailants. The commodore's ardour would not permit him to remain an inactive spectator of this scene. He was aware that the attempt was hazardous, and he thought his presence might animate his brave companions, and contribute to the success of this bold enterprise. He, therefore, as if by magic impulse, accompanied the party in this attack; passing from the fore-chains of his own ship into the enemy's quarter-gallery, and thence through the cabin to the quarter-deck, where he arrived in time to receive the sword of the dying commander, who had been mortally wounded by the boarders. The English were at this time in possession of every part of the ship, and a fire of musketry opened upon them from the stern-gallery of the San Josef. The commodore was not long in resolving on the line of conduct which he should adopt. The two alternatives that presented themselves were, to quit the prize, or instantly to board the three-decker. Confident in the bravery of his seamen, he determined on the latter. Directing, therefore, an additional number of men to be sent from the Captain on board the San Nicholas, Nelson, whom no danger could appal, headed himself the assailants in this new attack, exclaiming, "Westminster Abbey, or a glorious victory!" Success in a few minutes, and with little loss, crowned the enterprise. For a moment, commodore Nelson could scarcely persuade himself of this second instance of good fortune; he, therefore, ordered the Spanish commandant, who had the rank of brigadier, to assemble the officers on the quarter-deck, and means to be taken instantly for communicating to the crew the surrender of the ship. All the officers immediately appeared, and the commodore had the surrender of the San Josef duly confirmed, by each of them delivering his sword. The coxswain of the commodore's barge, John Sykes, had attended close by the side of his commander throughout this perilous attempt. To him the commodore gave in charge the swords of the Spanish officers, as he received them; and the undaunted tar, as they were delivered to him, tucked these honourable trophies under his arm with all the coolness imaginable. It was at this moment, one of the sailors came up, and with an Englishman's feeling, and apologizing for the liberty, took his commander by the hand, and congratulated him on being safe on the quarter-deck of a Spanish three-decker. On this occasion Nelson had received only a few bruises. The Spaniards had still eighteen or twenty ships, which had suffered little or no injury; but they did not think right to renew the battle. As soon as the action was discontinued, Nelson went on board the admiral's ship, who received him on the quarter-deck, took him in his arms, and said he could not sufficiently thank him.

Before the news of the action had arrived in England, Nelson had been advanced to the rank of rear-admiral; and now for his gallantry, on the 14th of February, he received the insignia of the Bath, and the gold medal from his sovereign. He was also presented with the freedom of the city of London in a gold box.



In the month of April 1797, sir Horatio Nelson hoisted his flag as rear-admiral of the blue, and was detached to bring down the garrison of Porto Ferrajo; and on the 28th of May, he shifted his flag from the Captain to the *Thefeus*, and was appointed to the command of the inner squadron at the blockade of Cadiz. During this service, his personal courage was, if possible, more conspicuous than at any other period of his former exploits. In the attack on the Spanish gun-boats, July 3d, 1797, he was boarded in his barge, with only its usual complement of ten men and the coxswain, accompanied by captain Freemantle. The commander of the Spanish gun-boats, Don Miguel Tregovia, in a barge rowed by 26 oars, having 30 men, including officers, made a most desperate effort to overpower sir Horatio Nelson and his brave companions. The conflict was long and doubtful: they fought hand to hand with their swords. His faithful coxswain, John Sykes, was wounded in defending the admiral; and twice saved his life, by parrying the blows that were aimed at him, and mortally wounded his adversaries; and at last actually interposed his head to receive the stroke of a sabre, which he could not by any other means avert. The whole of the Spaniards were either killed or wounded, and Nelson brought off the launch. Sir John Jervis, in his letter to the admiralty, dated the 5th of July, says, "The rear-admiral, who is always present in the most arduous enterprises, with the assistance of some other barges, boarded and carried two of the enemy's gun-boats, and a barge-launch belonging to one of the ships of war, with the commandant of the flotilla. Rear-admiral Nelson's actions speak for themselves: any praise of mine would fall very short of his merit."

On the 15th of July, he was detached with a small squadron to make an attack on the town of Santa Cruz, in the island of Teneriffe, where it was imagined a Manilla ship had landed an immense treasure. The rear-admiral, on his arrival before the town, lost no time in directing a thousand men, including marines, to be prepared for landing from the ships, under the direction of captains Trowbridge, Hood, Thomson, Freemantle, Bowen, Miller, and Waller, who volunteered their services. The boats of the squadron were accordingly manned, and the landing was effected in the course of a dark night. The party were in full possession of the town of Santa Cruz in about seven hours; but finding it impracticable to storm the citadel, they prepared for their retreat, which was allowed by the Spaniards unmolested, agreeably to the stipulations made with captain Trowbridge. On this expedition, Nelson had orders on no account to land in person with the forces, unless his presence was absolutely necessary; but no orders could restrain him, where there was danger to be encountered. That he was aware of the peril is evident from the letter which he wrote to the commander-in-chief: in this he says, "This night I command the whole force destined to land under the batteries, and to-morrow my head will probably be crowned either with laurel or cypress." He was very desirous, likewise, that his son-in-law, lieutenant Nesbit, should remain behind, saying, "Should we both fall, what will become of your poor mother? Besides, the care of the *Thefeus* falls to you; itay, therefore, and take charge of her." Nesbit replied, "Sir, the ship must take care of herself: I will go with you to-night, if I never go again." Nelson, in the act of stepping out of the boat, received a shot through the right elbow, and fell. Nesbit, who was close to him, placed him at the bottom of the boat, and applied his neckhandkerchief as a tourniquet to the admiral's arm, and conveyed him to the *Thefeus*, under a tremendous fire from the enemy. The same night, at 10 o'clock, the admiral's arm was amputated;

and immediately after, he began his official letter: and on the following day he wrote to lady Nelson, and says, "I know it will give you much pleasure, in finding that your son, under God's providence, was instrumental in saving my life." The loss of the English amounted to 250. But the admiral, in his official dispatches, did not mention his own wound; though in a private letter to lord St. Vincent, the first which he penned with his left hand, he says in the spirit of despondence, "I am become a burthen to my friends, and useless to my country. When I leave your command, I become dead to the world.—I go hence, and am no more seen." He was obliged to go to England for advice, that he could not have abroad; and here honours awaited him, abundantly more than sufficient to recover his accustomed spirit: but what gave zest to every pleasure was the assurance, that he would be soon fit for active service. Letters were addressed to him by the first lord of the admiralty, and by his steady friend the duke of Clarence, to congratulate him on his return. The freedom of the cities of Bristol and London was transmitted to him; he was invested with the order of the Bath, and he received a pension of 1000*l.* a-year. Not having been in England since he lost his eye, he went to receive a year's pay as smart-money; but could not obtain it, because he had not brought a certificate from a surgeon, that the sight was actually destroyed. He was somewhat angry that this formality should be insisted upon, the fact being so notorious. He, however, complied; and on his return to the office, the clerk, finding it was the annual pay of a captain only, observed, he thought it had been more. "Oh," replied Nelson, "this is only for an eye; in a few days, I shall come for an arm; and in a little time longer, God knows, most probably for a leg." Accordingly he soon after went, and exhibited the certificate of the loss of an arm. On his first appearance at court, his sovereign received him in the most gracious and tender manner, expressing his sorrow at the loss which the noble admiral had sustained, and at his impaired state of health, which might deprive the country of his future services. "May it please your majesty," said the admiral, "I can never think that a loss, which the performance of my duty has occasioned; and so long as I have a foot to stand on, I will combat for my king and country." Previously to his having received the grant, already referred to, of a pension, custom required that a memorial of his services should be drawn up, and a more brilliant detail was never exhibited. He had been actually engaged against the enemy 120 times; and during the war then carrying on, he had assisted at the capture of seven sail of the line, six frigates, four corvettes, and eleven privateers of different sizes; and taken or destroyed nearly fifty sail of merchant vessels.

In April 1798, sir Horatio Nelson hoisted his flag in the *Vanguard*, and he was ordered to rejoin earl St. Vincent. Upon his departure, his father addressed him with affection and much solemnity. "I trust in the Lord," said the venerable rector, "that he will prosper your going out and coming in. I earnestly desired once more to see you, and that wish has been heard. If I should presume to say, I hope again to see you, the question would be readily asked, How old are you? Vale, vale!" A gloomy foreboding of the future, it has been said, hung on the spirits of lady Nelson at their parting: this was, probably, through dread of losing him by the chance of war. No apprehension of losing his affection could possibly have existed: for we are assured, that all his letters to this time evince that he considered himself happy in his marriage; and his private life had hitherto been as spotless as his public one: and one of the last things he said to her was, that his own ambition was satisfied,



satisfied, but he was going to raise her to that rank in which he had long wished to see her.

As soon as he had joined earl St. Vincent, he was dispatched to the Mediterranean, that he might ascertain the object of the great expedition fitting out at Toulon. He sailed with a small squadron from Gibraltar, on the 9th of May, to watch this armament. On the 22d, a sudden storm in the gulph of Lyons carried away all the top-masts of the Vanguard; the fore-mast went into three pieces, and the bow-sprit was sprung. Captain (afterwards sir Alexander) Ball took the ship in tow, to carry her into St. Pietros, Sardinia. Nelson, apprehensive that this attempt might endanger both vessels, ordered him to cast off; but that excellent officer, possessing a spirit very like that of his commander, replied that he was confident he could save the Vanguard, and by God's help he would do it. Previously to this, there had been a coolness between these brave seamen; but from that moment, Nelson became fully sensible of the extraordinary merit of captain Ball, and a sincere friendship subsisted between them during the remainder of their lives. Being compelled to refit, the delay enabled him to secure his junction with the reinforcement which lord St. Vincent had sent to join him, under commodore Trowbridge. That officer brought with him no instructions to Nelson, as to the course he was to steer, nor any positive account of the enemy's destination: every thing was left to his own judgment. The first news was, that they had surprised Malta. He formed a plan for attacking them while at Gozo; but on the 22d, intelligence reached him that they had left that island on the 16th, the day after their arrival. He then pursued them to Egypt, but he could not learn any thing of them during his voyage; and when he reached Alexandria, the enemy were not there. He then shaped his course for the coast of Caramania, and steered from thence along the southern side of Candia, carrying a press of sail both night and day, with a contrary wind. Irritated that they should have eluded his vigilance, the tediousness of the night made him impatient, and the officer of the watch was repeatedly called upon to declare the hour, and convince his admiral, who measured time by his own eagerness, that it was not yet break of day. "It would have been my delight," said he, "to have tried Bonaparte on a wind." Baffled in his pursuit, Nelson returned to Sicily, took in stores at Syracuse, and then made for the Morea. There, on the 28th of July, he learnt that the French had been seen about a month before, steering to the south-east from Candia. He resolved to return, and immediately, with every sail set, stood again for the coast of Egypt. On the 1st of August, they came in sight of Alexandria; and at four in the afternoon, captain Hood, in the Zealous, made signal for the French fleet. For several preceding days, the admiral had scarcely taken either food or sleep: he now ordered his dinner to be served, while preparations were making for battle; and when his officers rose from table, and went to their separate stations, he said to them, "Before this time to-morrow I shall have gained a peerage or Westminster Abbey." It has never been explained, why Bonaparte, having effected his landing, should not have ordered the fleet to return. It is, however, certain, that it was detained by his express command; though after the death of Brueys, he accused him of having lingered there, contrary to his received orders. That admiral, not being able to enter the port of Alexandria, had moored his fleet in Aboukir bay, in a strong and compact line of battle; the leadmost vessel being as close as possible to a shoal on the north-west, and the rest of the fleet forming a kind of curve along the line of deep water, so as not to be turned by any

means on the south-west. This position the French admiral thought the strongest possible, in an open road; and he had no doubt that he could bid defiance to a force more than double their own. Instead of which, he had the advantage of numbers in ships, in guns, and in men: he had thirteen ships of the line and four frigates, carrying 1196 guns, and 11,230 men; whereas the English had the same number of ships of the line, and one 50 gun ship, carrying 1012 guns, and 8068 men. They had, however, Nelson for chief-in-command, who, in all cases, was a mighty host in himself. During the whole cruise, it had been Nelson's practice, whenever circumstances would admit of it, to have his captains on board the Vanguard, and fully explain to them his own ideas of the best modes of attack, whatever might be the situation of the enemy. His officers, therefore, were well acquainted with his principles of tactics; and such was his confidence in their abilities and zeal, that the only plan arranged, in case they should find the French at anchor, was for the ships to form as most convenient for their mutual support, and to anchor by the stern. His maxim was, "First gain the victory, and then make the best use of it you can."

When he had fully explained his intended plan, captain Berry exclaimed with transport, "If we succeed, what will the world say?" "There is no *if*," replied the admiral; that we shall succeed is most certain: who may live to tell the story is a very different question."

The position of the enemy presented the most formidable obstacles, but the admiral viewed these with the eye of a seaman determined on an attack; and it instantly struck him, that where there was room for an enemy's ship to swing, there was room for one of ours to anchor. No further signal was necessary than those which had already been made. The admiral's designs were as fully known to his whole squadron, as was his determination to conquer or perish in the attempt. We cannot attempt to give a detailed account of this action, of which there is an excellent narrative in the first volume of the "Naval Chronicle;" neither can we wholly pass by an occurrence so important to the interests of our country. The action commenced at sun-set, at half past 6 o'clock, with an ardour that cannot be described. The Goliath, captain Foley, and the Zealous, captain Hood, received the first fire from the enemy. It was received with silence. On board every one of the British ships, the crew were employed aloft in furling sails, and below in tending the braces, and making ready for anchoring; a wretched sight for the French, who, with all their advantages, were on that element, upon which, when the hour of trial comes, a Frenchman has no hope but in escape; and here an attempt of the kind was impossible. Admiral Brueys was a brave and able man, yet he had, in a private letter, boasted that the English had missed him, *because not finding themselves superior in numbers, they did not think it prudent to try their strength with him.* The moment was now come in which he was to be fatally undeceived. The shores of the bay of Aboukir were soon lined with spectators, who beheld the approach of the English, and the awful conflict of the hostile fleets in silent astonishment. Admiral Nelson had six colours flying in different parts of his rigging, lest they should be shot away;—that they should be struck, no British commander considers as a possibility. The two first ships of the French line had been dismasted within a quarter of an hour after the action, and the others suffered so severely, that victory was even now regarded as certain. The third, the fourth, and the fifth, were taken possession of at half past eight. In the mean time, Nelson had received a severe wound on the head from a piece of iron,



iron, called a langridge-shot; the skin of his forehead, being cut with it at right angles, hung down over his face. Captain Berry caught him in his arms, as he was falling. The great effusion of blood occasioned an apprehension that the wound was mortal. When the surgeon had examined it, he found there was no immediate danger, but urged him to keep himself quiet. He called for his secretary to write the dispatches, but he had been himself wounded. The chaplain was next summoned, but before he could get to the admiral's cabin, Nelson seized the pen, and began himself. Suddenly a cry was heard on deck, that the *Orient* was on fire. In the confusion, the admiral found his way up, and, to the astonishment of every one, appeared on the quarter-deck, when he immediately gave orders that boats should be sent to the relief of the enemy. It was about nine o'clock that this fire broke out. Bruce was dead: he had received three different wounds, yet would not leave his post: a fourth almost cut him in two; he refused to be carried below, being determined to die upon the deck. The flames soon overpowered every effort to save the ship. By the prodigious light of this conflagration, the situation of the two fleets were clearly distinguishable by the colours of each ship. About 10 o'clock the *Orient* blew up with a most tremendous explosion. This was followed with an awful pause, and a death-like silence. The firing instantaneously ceased on both sides, and the first sound was the fall of her shattered masts and yards, which had been carried to an astonishing height. The firing recommenced with the ships to leeward of the centre, and continued till three in the morning. At day-break, the two rear ships of the enemy were the only French ships of the line which had their colours flying: these cut their cables in the forenoon, and stood out to sea, and two frigates with them. The *Zealous* pursued, but as there was no other ship in a condition to support captain Hood, he was recalled. These, however, were all that escaped, and the victory was the most complete and glorious in the annals of naval history. Of thirteen sail of the line, nine were taken and two burnt; of the four frigates, one was sunk and another burnt. The loss on the part of the English, in killed and wounded, amounted to 895; on the part of the French, 5225 perished, and 3105, including the wounded, were sent on shore by cartel.

Admiral Nelson was now at the height of his glory. He had realized his hopes: he had nobly earned a peerage. Congratulations, rewards, and honours of every kind, were showered down upon him in great abundance, by all the princes and powers to which this important victory or splendid conquest was beneficial. The grand seignior, and his brother, the czar, the king of Naples and Sardinia, sent him presents, accompanied with letters, acknowledging his unequalled services to the common cause. In his own country he was created baron Nelson of the Nile and of Burnham Thorpe, with a pension of 2000*l.* for his own life, and those of two of his immediate successors. When this subject was brought before the house by Mr. secretary Dundas, he said, "Some victories had been marked with peculiar circumstances: some had been marked by the skill of the commanders; some by the particular bravery of the seamen; others by the great and extensive benefits resulting from them. But it was peculiar to this victory, that it united all those qualities by which other victories had been most distinguished. When," said he, "we look to the extent of the consequences of this victory, both at home and abroad; when we behold the spirit with which it has electrified Europe from one end to the other; we must acknowledge that there never did exist a victory, which had pro-

duced so much at present, and which was likely to produce so many and such important consequences in future." It was on this occasion that general Walpole expressed an opinion, that a higher degree of rank ought to have been conferred. To this Mr. Pitt replied, that he thought it needless to enter into that question, which, after all, belonged to the crown, and to the crown only. "Admiral Nelson's fame," he said, "would be coeval with the British name; and it would be remembered that he had obtained the greatest naval victory on record, when no man would think of asking whether he had been created a baron, a viscount, or an earl. True indeed, whatever title had been bestowed, he who received it would have been Nelson still: that name he had ennobled beyond all addition of nobility. It was the name by which England loved him, France feared him, and Italy, Egypt, and Turkey celebrated him, and by which he would continue to be known while the present kingdoms and languages of the world endure." See *Debates in the House of Commons* for November 21, 1798.

The title of baron once obtained was not satisfactory to Nelson; he had seen that sir John Jervis and admiral Duncan had obtained higher honours, and more splendid rewards for victories less decisive and important than that which he had achieved, and he did not hesitate to speak with indignation on this treatment of ministers.

On the twenty-second of September 1798 he arrived at Naples, where he was received as a deliverer by their majesties, and the whole kingdom. The king himself went some leagues to sea in his barge to meet him. The victory of the Nile had inspired the court with courage openly to declare against France, and a powerful army under general Mack was preparing to march against the French in Italy. Malta was at this time in a state of blockade by the English and Neapolitans, and lord Nelson went thither to assist in its reduction. In the month of November he proceeded with a squadron to Leghorn, which town, with its fortress, was delivered to the Neapolitan troops accompanying him. When the mismanagement and ill conduct of the court of Naples, and the cowardice of the troops, had rendered the French triumphant, and brought the capital into immediate danger, lord Nelson, zealously attached, by principle, to the royal family, took them, with his friends sir William and lady Hamilton, on board his ship, and carried them safe to Palermo. He remained at that capital, directing the various operations of the vessels under his orders in the Mediterranean, not without some occasional altercations with sir Sidney Smith. Lord Nelson had a punctilious jealousy respecting any interference with him in the rights attached to his station, and felt a high sense of his own consequence and superiority, though, as it has appeared in various instances, no man was more ready to give due praise to others. His jealousy had no taint of envy in it, but it proceeded from his early habit of naval discipline, and a consciousness of the importance of his services. After the French had taken possession of Naples, and established a republic, on the ruins of the former monarchy, the dormant spirit of loyalty began to revive, and measures were taken for a counter revolution. In these lord Nelson concurred with an enthusiastic zeal, and he sent captain Trowbridge to cruise in the bay of Naples, and reduce the islands by which it is surrounded. On the 24th of June 1799 his lordship himself arrived in the bay, when the republicans had just entered into an armistice with the Neapolitan general Ruffo, signed by commodore Foote and the Turkish and Russian commanders, for the castles which alone remained in their possession. The king of Naples, in this prosperous state of his affairs, was induced to disavow the authority of the cardinal to treat with subjects in rebellion,



and lord Nelson immediately put an end to the truce. The fortresses were afterwards obliged to capitulate, and a bloody execution, in spite of the treaty, took place of a number of the Neapolitan republicans, under the eye of the British admiral. For this part of lord Nelson's conduct, much has been said by his panegyrists, but it is not, and cannot be, justified. He submitted to be subservient to the passions of the court, and this, perhaps, the more readily as his own prejudices and passions were all on the same side. That we have not spoken too strongly on this subject is evident from the vindication of commodore Foote, who shall speak for himself: "Nothing," says this much injured and insulted officer, "can be more evident than the fact that a solemn capitulation had been agreed upon, formally signed by the chief commander of the forces of the king of Naples, by the Russian commander, and by myself, all duly authorized to sign any capitulation in the absence of superior powers. This was not a treaty of peace, subject to ratification: it was not liable to be broken; it was a serious agreement for surrender, upon terms which involved the lives and properties of men, who might have chosen to forfeit those lives and properties, had they not relied principally upon the faith of a British officer. Parts of the agreement were performed, and actual advantage was afterwards taken of those parts of the capitulation that had been thus executed, to seize the unhappy men who, having been thus deceived by a sacred pledge, were sacrificed in a cruel and despot manner." "These facts," says the writer in the Quarterly Review, "are certain and undeniable. They cannot be defended: they cannot be excused; they cannot by any sophistry be palliated. A faithful historian has no alternative but to relate them with shame and sorrow."

On the ninth of August lord Nelson brought his Sicilian majesty safe to his court, having kept him some weeks in his ship out of the reach of peril, and on the thirteenth the king presented him with a sword most magnificently enriched with diamonds, and conferred upon him the title of duke of Brontë, and annexed to the title an estate supposed to be worth 3000*l. per ann.* Lord Nelson himself gave an account of the presents which he had received for his services, in the Mediterranean, between the first of October 1798 to the same date in the following year. Besides what has been just mentioned he received from the king and parliament of Great Britain a peerage and 2000*l. per ann.* for his own life and two next heirs. From the East India company 10,000*l.*; from the Turkey company a piece of plate of great value; from the city of London a sword of exquisite workmanship and great worth; from the grand seignior a diamond aigrette, or plume of triumph, valued at 2000*l.*; also a rich pelisse valued at 1000*l.*, and from the seignior's mother a rose set with diamonds of equal value; from the emperor of Russia and the king of Sardinia boxes set with diamonds worth 3700*l.*: besides many other presents of less value, but costly, and expressive of a high sense of gratitude in the donors.

It was at Naples, that lord Nelson suffered himself to be so far infatuated as to form a connection with lady Hamilton, which led to his separation from his own wife, and till which he had been an affectionate husband, and happy and amiable in all his domestic relations. This is incontestibly proved by the letters which passed between him and his lady, and which have been given in the life of his lordship by Messrs. Clarke and M<sup>r</sup>Arthur.

After the appointment of lord Keith to the command of the Mediterranean fleet, lord Nelson made preparations to return, and proceeding, in company with sir William and lady Hamilton, to Trieste, he travelled through Germany

to Hamburg every where received with distinguished honours. He embarked at Cuxhaven, and landed at Yarmouth on the sixth of November 1800, after an absence from his native country of three years. In the following January he received orders to embark again, and it was during this short interval that he formally separated from lady Nelson. Some of his last words to her were, "I call God to witness that there is nothing in you or your conduct that I wish otherwise." He was now raised to the rank of vice-admiral of the blue, and soon after hoisted his flag on board the San Josef of 112 guns, his own prize at the battle of cape St. Vincent. About this time the emperor Paul of Russia had renewed the northern confederacy, the express and avowed object of which was to set limits to the naval supremacy of England. A resolution being taken by the English cabinet to attempt its dissolution, a formidable fleet was fitted out for the North seas under sir Hyde Parker, in which lord Nelson consented to go second in command. Having shifted his flag to the St. George, of 98 guns, he sailed with the fleet in the month of March, and on the 30th of that same month he led the way through the Sound, which was passed without any loss. When the fleet sailed, it was known that its destination was Copenhagen; some Danish sailors who were on board the Amazon frigate went to captain Riou, and begged he would get them exchanged into a ship bound on some other service; they did not wish to quit the British navy, but they intreated that they might not be led to fight against their own country. The captain felt deeply for their situation, ordered his boat instantly, and did not return to the Amazon till he had procured their exchange. See Riou.

The battle of Copenhagen gave occasion for an equal display of lord Nelson's talents as that of the Nile. The Danes were well prepared for defence. Upwards of two hundred pieces of cannon were mounted upon the crown batteries at the entrance of the harbour, and a line of 25 two-deckers, frigates, and floating batteries, was moored across its mouth. An attack being determined upon, the conduct of it was entrusted to lord Nelson; the action was fought on the second of April; Nelson had with him twelve ships of the line, with all the frigates and small craft, the remainder of the fleet was with the commander-in-chief, about four miles off. The combat which succeeded was one of the most terrible on record. Nelson himself said, that of all the engagements in which he had borne a part it was the most terrible. It began at ten in the morning, and at one victory had not declared itself. A shot through the main-mast knocked a few splinters about the admiral: "It is warm work," said he, "and this may be the last day to any of us in a moment; but mark you, I would not be elsewhere for thousands." Just at this moment sir Hyde Parker made signal for the action to cease. It was reported to him, but he continued pacing the deck, and appeared to take no notice of it. The signal-lieutenant asked if he should repeat it. "No," replied Nelson, "acknowledge it." Presently he called to know if the signal for close action was still hoisted, and being answered in the affirmative, he said "Mind you keep it so." "Doctor," said he to the surgeon, "you know what's shewn on board the commander-in-chief, N 39?" He said he did, and asked what it meant. "Why to leave off action:—No d—n me if I do! You know Foley," speaking now to his captain, "I have only one eye, and have a right to be blind sometimes. D—n the signal! hoist mine for closer battle; that is the way I answer such signals.—Nail mine to the mast." Admiral Graves disobeyed that of the commander-in-chief, in like manner, but whether intentionally, or by mistake, has not been explained. The squadron of frigates hauled off:  
Riou



Riou in the Amazon probably did not think himself sufficiently high in reputation to set at defiance the commands of his superior officer; but at the moment that the Amazon shewed her stern to the enemy the captain was killed:—that he obeyed the signal for retreat with regret was evident from his last words, which expressed his sorrow, and he added, "What will Nelson think of us?" About two o'clock, great part of the Danish line had ceased to fire, and many of them had struck, but, though the victory was complete, yet it was difficult to take possession of the vanquished ships, on account of the fire from the shore, which was still kept up. Nelson was irritated at this, and the more so, as part of his own fleet was in a perilous state. The crown batteries were, as yet, untouched, as were the ships at the entrance of the arsenal; while two of his own were aground, and others in imminent hazard of alike fate. At this critical period lord Nelson, with the presence of mind of one familiarized to danger, instantly opened a negotiation, pretending that he had been urged to this step through humanity to the vanquished Danes: He thus wrote to the crown prince: "Lord Nelson has directions to spare Denmark, when no longer resisting; but if the firing is continued on the part of Denmark, lord Nelson must be obliged to set on fire all the floating batteries he has taken, without having the power of saving the brave Danes who have defended them." A wafer was given him for his letter, but he ordered wax and candle, saying, it was no time to appear informal, and he did not wish it to appear that he was hurried. This measure put an end to further carnage; and on the landing of lord Nelson, the preliminaries of a treaty were arranged, which finally terminated the dispute. The death of Paul, though not then known, had happened about nine days before this dreadful engagement; and thus the northern confederacy was annihilated. For this signal service, in which lord Nelson has been applauded as well for his adroitness as a negotiator and statesman, as for his courage and talents as an admiral, he was raised to the rank of viscount. "There was some prudence," says a biographer, "in thus dealing out honours to him step by step; had he lived long enough, he would have fought his way to a dukedom."

The preparations made for the invasion of England from Boulogne, having now excited a great alarm in the nation, it was thought advisable to calm the public fears by entrusting the marine defence to the popular hero, and lord Nelson was appointed commander-in-chief of a squadron, with the whole attached flotilla of gun-boats, bomb-vessels, &c. Resolving to attempt something that was worthy of his name, and the celebrity to which he had attained; something that should effect more than a temporary security, he planned a vigorous attack upon the enemy's vessels before Boulogne harbour. This was executed on the 16th of August 1801, but from a mistaken calculation of the enemy's preparations, and from the extreme difficulty of the enterprize, it proved unsuccessful. He however received the thanks of the first lord of the admiralty in very warm terms: "I cannot," says lord St. Vincent, "sufficiently express my admiration of the zeal and persevering courage with which this gallant enterprize was followed up, lamenting most sincerely the loss sustained in it. The manner in which the boats of the flotilla were made fast to the ground, and to each other, could not have been foreseen. The highest praise is due to your lordship, and all under your command, who were actors in this gallant attempt." The public at large, however, did not consider the matter in the same light; they beheld the loss of so many brave men with the deepest regret, and thought the persons who ordered the attack, or those who undertook it,

ought to have been apprized of all circumstances before the attempt was made.

The ensuing peace restored lord Nelson to his friends on shore, and to the enjoyment of that renown which rendered all his journals of amuselement to different parts of the kingdom so many triumphal progresses. On the termination of the short-lived peace, lord Nelson, more fitted for action than repose, accepted the command of the Mediterranean fleet, and in May 1803, sailed for Gibraltar in his flagship the Victory. It was his particular business to watch the Toulon fleet; but he disdained a close blockade, and rather wished to give the enemy an opportunity of coming out, and trying his strength and fortune against him. This was not so successful as he anticipated, for after having been on the look-out for two years, with an inferior force they escaped him, formed a junction with the Spaniards, and ran for the West Indies, whither Nelson soon followed. The enemy's fleet consisted of eighteen sail of the line and six frigates, having 12,000 troops aboard, which Nelson did not hesitate to pursue with ten ships and three frigates. "There is just a Frenchman a-piece, he said to his captains, leaving the Spaniards to me: when I haul my colours down, I expect you will do the same, but not till then." This extraordinary chase across the Atlantic was conducted with singular order and expedition. The mere terror of Nelson's name compelled them to fly before him; false intelligence, which he, and he alone, suspected to be false, misled him, and they secured their return to Europe, without having accomplished any other part of their purpose than that of reinforcing some of their own islands; ours were preserved from pillage, invasion, and perhaps conquest, by this pursuit, which, in all its circumstances, cannot be paralleled in naval history. Having pursued them to Europe, he delivered over his squadron to admiral Cornwallis, lest they should make for Brest to liberate that fleet, and place him between two fires, and then returned to England with an intention to enjoy leisure and repose with his friends. He had scarcely been at Merton, his country seat, a month, when captain Blackwood, on his way to the admiralty with dispatches, called early in the morning. Upon seeing him, he exclaimed, "I am sure you bring me news of the Spanish fleets! I think I shall have to beat them yet." They had joined the fleet from Ferrol, and had got safe to Cadiz. "Depend upon it, Blackwood, I shall yet give M. Villeneuve a drubbing." After the captain had left him he was much agitated, but affected to be quite easy: his friends, however, perceived that he was anxious to be again in service; that his whole mind was bent upon meeting the combined fleet, which he considered as his own property, and that he would be the most miserable man living if any man but himself did the business. He again offered his services, which were readily accepted by the first lord of the admiralty, who gave him a list of the navy, and bade him choose his own officers. He reached Portsmouth after an absence of only twenty-five days: he was hailed with joy wherever he went: numbers followed him to the shore, and many, when they saw him embark, knelt down to offer up their prayers for his success. The wind was against him, and blew strong, but such was his impatience to be at the scene of action, that he worked down channel, and after a rough passage arrived off Cadiz on his birth-day, September 29, on which day the French admiral, Villeneuve, received orders to put to sea the first opportunity. In point of preparation the two fleets were supposed to be on an equality; but in respect to force, the French were the stronger in the proportion of nearly three to two, they having 34 ships of the line of 74 guns



and upwards; and under lord Nelson there were but 24 of the same rank: in frigates they out-numbered him in a similar proportion. Early in the month of October, lord Nelson received information which led him to imagine the enemy would soon put to sea. He had already arranged a plan according to which he determined to fight. He was aware of the mischief of too many signals, and was resolved never to distract the attention of his fleet on the day of action by a great number of them. On the 4th of October he assembled the admirals and captains of the fleet into the cabin of his ship, the *Victory*, and laid before them a new and simple mode of attack. Every man comprehended his method in a moment, and felt certain that it must succeed. It proved irresistible.

Lord Nelson did not remain directly off Cadiz with his fleet, or even within sight of the port. His object was to induce the enemy to come out; with this view he stationed his fleet in the following manner. The *Euryalus* frigate was within half a mile of the mouth of the harbour to watch the enemy's movements, and to give the earliest intelligence. At a still greater distance he had seven or eight sail of the line. He himself remained off Cape St. Mary with the rest of the fleet, and a line of frigates extended and communicated between him and the seven or eight sail off Cadiz. The advantage of this plan was, that he could receive ample supplies and reinforcements off Cape St. Mary, without the enemy being informed of it, and thus they always remained ignorant of the real force under his command: Villeneuve had also been misled by an American, unintentionally on his part, who declared that he was sure Nelson could not possibly be with the fleet, as he had seen him in London but a few days before. Relying on this, and on their own superiority, they put to sea on the 19th, and on the 21st lord Nelson intercepted them off Cape Trafalgar, about sixty miles east of Cadiz. When his lordship found, that by his manœuvres, he had placed the enemy in such a situation, that they could not avoid an engagement, he displayed much animation, and his usual confidence of victory. "Now," said he, "they cannot escape us; I think we may make sure of twenty of them; I shall probably lose a leg, but that will be purchasing a victory cheaply." Notwithstanding this light way of speaking, Nelson never went into battle but with a full sense of its danger, and he seems, on all occasions of the kind, rather to have prepared his mind for death, than to have taken any means to banish the thought of it. On the morning of this, his last contest for glory and immortality, he wrote a prayer in his journal, and solemnly bequeathed lady Hamilton as a legacy to his king and country. He left also to the beneficence of his country his adopted daughter, desiring that in future she would use his name only. "There," said he, "are the only favours I ask of my king and country at this moment, when I am going to fight their battle." He had put on the coat which he always wore in action, and kept for that purpose, with a degree of veneration: it bore the insignia of all his orders. "In honour," said he, "I gained them, and in honour I will die with them." The last order which his lordship gave previously to action, was short, but comprehensive, "ENGLAND EXPECTS EVERY MAN TO DO HIS DUTY." It was received with a shout of applause throughout the whole fleet. "Now," said the admiral, "I can do no more; we must trust to the great Disposer of all events, and the justice of our cause. I thank God for this opportunity of doing my duty." It had been represented to him so strongly, both by captain Blackwood, and his own captain, Hardy, how advantageous it would be for him to keep out of the action as long as possible, that

he consented that the *Temeraire*, which was then failing abreast of the *Victory*, should be ordered to pass ahead, and the *Leviathan* also. They could not possibly do this if the *Victory* continued to carry all her sail; and yet so far was Nelson from shortening sail, that he seemed to take pleasure in baffling the advice to which he could not but assent. As usual, he hoisted several flags, that they might not be shot away. The enemy, on the other hand, shewed no colours till late in the action, when they began to feel the necessity of having them to strike.

Lord Nelson determined himself to fight the *Santissima Trinidad*; and it is worthy of remark, that he gained the highest honour in grappling with this ship in the action off Cape St. Vincent. She was the largest ship in the world, carried 136 guns, and had four decks. The *Victory* did not fire a single shot till she was close alongside the *Trinidad*, and had already lost 50 men, in killed and wounded. Lord Nelson ordered his ship to be lashed to his rival, and in this labour the commander of the *Trinidad* ordered his men also to assist. For four hours the conflict which ensued was tremendous. The *Victory* ran on board the *Redoubtable*, which, firing her broad-sides into the English flag-ship, instantly let down her lower deck ports, for fear of being boarded through them. Captain Harvey, in the *Temeraire*, fell on board the *Redoubtable* on the other side; another ship, in like manner, was on board the *Temeraire*, so that these four ships, in the heat of battle, formed as compact a tier as if they had been moored together, their heads lying all the same way. The lieutenants of the *Victory* immediately depressed their guns, and fired with a diminished charge, lest the shot should pass through and injure the *Temeraire*: and because there was danger that the enemy's ship might take fire from the guns of the lower-deck, whose muzzles touched her side when they were run out, the fireman of each gun stood ready with a bucket of water, which, as soon as the gun was discharged, he dashed at the hole made in her sides by the shot. In the prayer to which we have already alluded, and which Nelson wrote before the action, he desires that humanity, after victory, might distinguish the British fleet. Setting an example himself, he twice gave orders to cease firing upon the *Redoubtable*, supposing she had struck, because her great guns were silent; and as she carried no flag, there were no means of ascertaining the fact. From this ship, whose destruction was twice delayed by his wish to spare the vanquished, he received his death. Captain Hardy, on perceiving frequent showers of musket-balls fired on the *Victory's* quarter-deck, requested lord Nelson to take off the *insignia* by which he was exposed, as a mark, to the sharp shooters placed in the main-round-top of the enemy's ships. He answered, he would when he had time; but paid no farther attention to his safety. In a minute afterwards, his secretary, Mr. Scott, who stood near him, was killed. A musket-ball entered his head, and he fell dead instantly. Another shot, a few minutes afterwards, struck the epaulette on Nelson's left shoulder: he fell with his face on the deck. "They have done for me at last, Hardy," he exclaimed, "my back-bone is shot through." He did not, for the smallest portion of time, lose his presence of mind, but observed, as they were carrying him down the ladder, that the tiller ropes, which had been shot away, were not replaced, and ordered that new ones should be rove immediately; and to prevent any dejection which the sight of their dying admiral might occasion, he took out his handkerchief and covered his face, and the insignia upon his coat; certain by the sensations which he felt in his back, that no human aid could benefit him.



After the surgeon had probed the wound, he desired him to return to assist those to whom his services might be useful, "for," said he, "you can do nothing for me." From the severity of the pain he could not refrain from wishing to die, "yet," said he, checking himself, "one would like to live a little longer;" no doubt to hear the completion of a victory which he had seen so gloriously begun. Having been placed in a chair, he desired that captain Hardy might attend him, and during the hour that he lived he displayed all his coolness and recollection, and employed the time in dictating orders relative to the battle, in receiving reports, in enquiring what was the condition of the enemy, and what ships had struck. Upon hearing that fourteen or fifteen had certainly surrendered, "That's well," said he, "but I bargained for twenty." After a short pause, he exclaimed, "Anchor, Hardy, anchor." To this the captain replied, that he supposed admiral Collingwood would now take upon himself the command. "Not while I live," cried the dying hero, "no, do *you* anchor Hardy." He had foreseen the great importance of this; for, by the position in which the enemy waited for the attack, the shoals of Trafalgar and St. Pedro were under their lee, and the port of Cadiz, with the existing wind open to them, and it was on this account he had, before the action, made signal to prepare to anchor. The last ship that struck before his death was the Santissima Trinidad, of which he heard with the most lively emotions of joy. He felt himself now nearly at the last gasp, and called for Hardy, and said in a low tone, "Don't throw me overboard," and desired that he might be buried at Burnham Thorpe, unless it should please the king to order otherwise. "Kiss me, Hardy," said he, Hardy knelt and kissed his cheek, and the admiral said, "Now I am satisfied. I have done my duty. Thank God! I have done my duty:" these were the last words that he uttered, and in the arms of his gallant captain he breathed his last.

The final event of this action was the capture of eighteen men-of-war, of the French commander-in-chief, and two other flag-officers, with a general. It was a blow to the maritime strength of the two hostile powers that entirely ruined their present projects, and lastingly crippled their exertions. The maritime war might from this day be considered as at an end: the fleets of the enemy were not merely defeated: they were as good as annihilated, and with them the spirit of the French marine so completely depressed, as to forbid the hope of a revival, till a new race of men should arise, upon whom the terror of the name of Nelson would cease to operate. Well then might the death of lord Nelson be felt as something more than a public calamity: well might our countrymen, when the fatal intelligence was communicated to them, start and turn pale, as if they had heard of the loss of a dear friend; the object of their admiration and affection, of their pride and hopes, had been suddenly taken from them, and it is still [1813] in the remembrance of every one, that it seemed as if they had never, till then, known how deeply they esteemed and revered him. "It was not," says a writer already referred to, "from any selfish reflection upon our own loss that we mourned for him: the general sorrow was of a higher character. The people of England grieved that funeral ceremonies and public monuments were all which they could now bestow upon him, whom the king, the legislature, and the nation, could alike have delighted to honour; whom every tongue would have blessed; whose presence, in every village through which he should have passed, would have awakened the church bells; have given school-boys a holiday; have drawn children from their sports to gaze upon

him, and old men from the chimney corner to look upon Nelson ere they died. The victory of Trafalgar was indeed celebrated with the usual forms of rejoicing, but they were without joy; for such was the glory of Nelson and of the British navy, in a great measure through his genius, that they scarcely seemed to receive any addition from this; that the most signal victory that ever was achieved upon the seas, and the destruction of so great a fleet, hardly appeared to add to our strength or security; for we felt ourselves as strong and secure while Nelson was living to watch them, as when they were destroyed."

Perhaps, in no country, have higher public honours been paid to the memory of a public benefactor than those that were enthusiastically given to lord Nelson. His body was brought home for interment: it was exhibited for several days in the proudest state at Greenwich: from thence it was conveyed to Westminster; and finally buried in the cathedral of St. Paul's. The funeral, made at the public expence, was the most solemn and magnificent spectacle ever beheld in this country, and was duly honoured by the presence of seven of the sons of his majesty. Honours and rewards were munificently bestowed on his relations, and an earldom was perpetuated in the family of Nelson, of which his brother was the first possessor.

Admiral Nelson died at the age of forty-seven, "yet *he* cannot be said to have fallen prematurely, whose work was done; nor ought he to be lamented who died so full of honours, and at the height of human fame. The most triumphant death is that of the martyr, the most awful that of the martyred patriot; the most splendid that of the hero in the hour of victory; and, if the chariot and the horses of fire had been vouchsafed for Nelson's translation, he could scarcely have departed in a brighter blaze of glory. He left us, not indeed his mantle of inspiration, but a name and an example which are at this hour inspiring hundreds of the youth of England—a name which is our pride, and an example which will continue to be our shield and our strength."

We cannot conclude without observing, that to the traits of character which have been already given, must be added, what he esteemed, a spirit of piety which he imbibed in his youth, and which distinguished him through the whole of his progress. It appeared in all his public dispatches, a fervent aspiration fell from his pen just as he was advancing to the final combat: and expressions of true Christian resignation were among the last that faltered from his dying lips.

For this article, we have been, in part, indebted to the fifth number of the Quarterly Review, but principally to a very popular periodical work, entitled "The Naval Chronicle," to which his lordship communicated, under his own hand, all the particulars of the early part of his life and naval exploits, and from which, would our limits have allowed it, we could have selected a volume almost of interesting matter relating to lord Nelson.

NELSON, in *Geography*, a county of Kentucky, in America, containing 9087 inhabitants, of whom 1234 are slaves, Its chief town is Bairdstown.

NELSON'S Quay, a town with a post-office in Charlestown county, South Carolina; 539 miles from Washington.

NELSON'S Fort, a settlement on the W. shore of Hudson's Bay, situated at the mouth of a river of the same name; 250 miles S.E. of Churchill fort, and 600 N.W. of Rupert's fort, in the possession of the Hudson's Bay company. N. lat. 57° 12'. W. long. 92° 42'.

NELSON'S River, the N.W. branch of Hayes river, on the W. shore of Hudson's Bay, separated into two channels by Hayes island, at the mouth of which Nelson's fort is situated.

NELSONIA,



**NELSONIA**, in *Botany*, so named by Mr. Brown, in just commemoration of the merits of the late Mr. David Nelson, an excellent gardener and good practical botanist, who was sent out with captain Cook, in his last voyage, and discovered many new plants, for which we have, in several places, had occasion to mention him. He afterwards accompanied captain Bligh, in the first voyage of that able navigator, and unfortunately died in the island of Timor.—Brown Prod. Nov. Holl. v. 1. 480. Class and order, *Dianthia Monogynia*. Nat. Ord. *Personatæ*, Linn. *Acanthi*, or *Acanthaceæ*, Juss.

Ess. Ch. Calyx in four deep unequal segments. Corolla funnel-shaped; limb five-cleft, slightly unequal. Stamens two, shorter than the tube, without any barren filaments. Cells of the anthers equal in their insertion, divaricated. Capsule sessile, with an elastic point, the partitions from the centre of the valves. Seeds several in each cell, without any spinous spring. *Brown*.

A genus of herbaceous plants, with diffuse stems, and a downy, somewhat hoary, habit. *Leaves* broadish, undivided. *Spikes* terminal, dense, equal. *Braçteas* broad, opposite, single-flowered. *Flowers* small, each with a pair of smaller inner *braçteas*. Anterior segment of the *calyx* emarginate, or divided half way down. *Corolla* either white or purple.

This genus is said to differ from Vahl's *Elytraria*, (with which it agrees in the want of an elastic spinous process under each seed,) in the want of barren stamens, as well as in the figure of its anthers, and especially in habit. Mr. Brown, besides some hitherto nondescript species from the East Indies, and others from the tropical regions of Africa, suspects that *Justicia hirsuta*, *origanoides*, *canescens* and *nummularifolia* of Vahl, Enum. v. 1. 121, 122, properly belong to this genus.

The two New Holland species, both tropical, are thus defined.

1. *N. campestris*.—Leaves elliptical, woolly. *Braçteas* of the spike acute. Anterior segment of the calyx cloven half way down; dorsal one acute, undivided. Segments of the corolla entire.—Gathered by Mr. Brown.

2. *N. rotundifolia*.—Leaves roundish; somewhat hairy when full-grown. *Braçteas* of the spike acute. Two broader segments of the calyx emarginate, as well as the divisions of the corolla.—Gathered by the Rt. Hon. Sir Joseph Banks, in whose herbarium only Mr. Brown has seen it.

**NELUMBIUM**, Juss. 68. Willd. v. 2. 1258. Ait. Hort. Kew. ed. 2. v. 3. 332. Curt. Mag. t. 903; see **NELUMBO**. See also the article **CYAMUS**, written by the late Rev. Mr. Wood.

**NELUMBO**, the name given by the natives of Ceylon, to the sacred bean of India, *νεμεμος* of Theophrastus, *Nymphaea Nelumbæ* of Linnæus. Adanson, who first, with unquestionable propriety, separated this plant from *Nymphaea*, having no objection to barbarous names, retained *Nelumbo* for a generic appellation, and he is followed by Gærtner. It is not easy to say why they preferred a very confined and local appellation, for a plant known throughout India by the name of *Tamarà*, by which it is distinguished in the *Hortus Malabaricus*, and celebrated in Hindù poetry and mythology. Jussieu intended as an improvement the alteration into **NELUMBIUM**; see that article. We wish to adhere, as much as possible, to the Linnæan rejection of barbarous generic names, and have no desire to establish either *Nelumbo* or *Tamarà*, greatly preferring **CYAMUS**; see that article. It is much to be wished that botanists, not totally illiterate and tasteless, would advert a little to the propriety of keep-

ing their nomenclature under some regulations of sense and uniformity, which those who can read the writings of Linnæus, will find already established, and abundantly supported by reason and convenience. S.

**NEMA**, in *Geography*, a river of Russia, in the province of Usting, which runs into the Vitchagda at Utnemskoi.

**NEMÆAN**, or **NEMÆAN Games**, one of the four great kinds of games, or combats, celebrated among the ancient Greeks.

Some say, they were instituted by Hercules, on occasion of his killing the Nemæan lion; and that it was hence they took their name, as also the place of celebration, the forest of Nemæa.

Others relate, that the seven chiefs sent to Thebes, under the conduct of Polynices, being extremely oppressed in their journey with thirst, met with Hyppisyle of Lemnos, who had in her arms Opheltes, son of Lycurgus, priest of Jupiter, and Eurydice. They begging her to shew them some water, she laid the child down on the grass, and conducted them to a well. In her absence, a venomous serpent killed the child; upon which the nurse, out of an excess of grief, grew desperate. The chiefs, at their return with her, killed the serpent, buried the young Opheltes, and, to divert Hyppisyle, instituted the Nemæan games.

Ælian says, they were indeed the seven chiefs going to the siege of Thebes that instituted them; but he adds, that it was in favour of Pronax.

Pausanias refers the institution of them to Adrastus; and their restoration to his descendants.

Lastly, Hercules, on his victory over the Nemæan lion, augmented the games, and consecrated them to Jupiter Nemæus.

The games were opened with sacrificing to Nemæan Jove, appointing him a priest, and proposing a reward for such as should be victors in the games.

They were held every three years, in the month called *Panemos* by the Corinthians, and *Boedromion* by the Athenians.

The Argians were the judges, and sat clothed in black, to express the origin of the games. As they were instituted by warriors, none at first were admitted to them but military men, and the games themselves were only equestrian and gymnastic; at length they were open to the people, and other kinds of sports were introduced.

The conquerors were crowned with olive, till the time of the war with the Medes; when a blow they received in that war, occasioned them to change the olive for the smallage, a funeral plant: though others maintain, that the crown was originally smallage, on account of the death of Opheltes, otherwise called Archemorus; this plant being supposed to have received the blood which ran from the wound made by the serpent.

**NEMAKA PEARLS**, a name given by Mr. Barrow to substances which he found on the mountains N. of the Cape of Good Hope, and which consisted of large rounded masses of granite.

**NEMAKAS**, **GREAT** and **LITTLE**, in *Geography*, inhabit a part of the colony of the Cape of Good Hope, and are separated by the Orange river, called also the Groot or Great river, where it discharges itself into the sea. We refer to Mr. Barrow for particulars.

**NEMALLY**, a town of Hindooستان, in Madura; 15 miles N. of Coilpetta.

**NEMALONI**, in *Ancient Geography*, a people of the Alps, placed by Pliny in the number of those who were subdued by Augustus.

**NEMANTURISTA**, a town of Spain, according to Ptolemy,



Ptolemy, who places it among the Vascones between Andelus and Curnonium.

NEMARAM, in *Geography*, a town of Hindoostan, in Golconda; 32 miles S. of Combamet.

NEMATOSPERMUM, in *Botany*, from *νημα*, *νῆμα*, a thread, and *σπέρμα*, seed, a genus established by M. Richard, in a catalogue of Cayenne plants, sent to the Natural History Society at Paris, in 1792, and published in their *Annales*, v. 1. 105. Class and order, *Monandria Monogynia*. Nat. Ord. *Amentaceæ*, Julf.

Eff. Ch. Catkins thread-shaped. Anther of two distant cells. Stigmas three, bristle-shaped. Capsule of one cell. Seeds three, suspended by threads from the valves.

1. *N. levigatum*. The only known species. The leaves are ovate, very smooth. Capsule oval, smooth. It is thought to be akin to the *Lacistema myricoides*, Swartz. Prod. 12; see **LACITEMA**. The name alludes to the situation and insertion of the seeds.

NEMAUSUS, in *Ancient Geography*, the name of one of the richest towns of Gallia Narbonnensis, which was the capital of the Arecomaci. In the Notitia Imperii it is called "Præfectus thesaurorum Nemausentium." See **NISMES**.

NEMBRO, in *Geography*, a town of Italy, in the department of the Serio; four miles N.E. of Bergamo.

NEMBS, a town of the duchy of Holstein; six miles N. of Segeberg.

NEMEA, in *Ancient Geography*, a town of the Argolide, situated at the foot of mount Apefas, upon which it is said that Perseus was the first who offered sacrifice to Jupiter Apefantius. In this town was a very beautiful temple of the Nemean Jupiter, surrounded with a grove of cypresses. The chief priest of the temple was named by the Argians. They also, as some have said, instituted in this place the Nemean games (see **NEMEAN**), in which the prize of the cause was contended for by persons completely armed. Here was shewn the tomb of Opheltes, encompassed by a wall, within the compass of which they had some altars. It is also said that at a small distance from this place was the sepulchre of Lycurgus, king of Thrace, and particularly of Nemea.—Also, a river of the Peloponnesus, which, according to Strabo, separated the kingdom of Sicyon from the territory of Corinth.—Also, a country of the Peloponnesus, in the Elide.

NEMEN, in *Geography*, a town of Hindoostan, in Travancore; 15 miles N.W. of Travancore.

NEMERSDORF, a town of Germany, in the principality of Culmbach; six miles N.E. of Bayreuth.

NEMESA, in *Ancient Geography*, a country of the Peloponnesus, in which Hercules is said to have killed the lion.

NEMESIA, in *Antiquity*, a religious solemnity in memory of deceased persons, so called from the goddess Nemesis, who was thought to defend the relics and memories of the dead from injuries.

NEMESIANUS, M. AURELIUS OLYMPIUS, in *Biography*, a Latin poet, was a native of Carthage, and flourished under the emperors Carus, Carinus, and Numerianus. The last of these princes had a particular esteem for him. Under this prince he rose to high favour and fortune, and probably interested himself in behalf of his contemporary poet Calphurnius, who was reduced to indigence. Nemesianus was author of three poems, of which only the one entitled "Cynegeticon" has come down to modern times, and that in a very imperfect state. It was discovered by Sannazarius of Tours, and published by Paulo Manuzio at Venice in 1538. It has also been published in the "Poetæ rei Venaticæ," by Barthelet in 1613, and

at Leyden in 1653, with notes. The "Cynegeticon" appears to have been well known in the dark ages; it was so highly esteemed in the eighth century, that it was read among the classics in the public schools, in the time of Charlemagne. It cannot rank high as a poetical composition, but is said to deserve praise for its polish and elegance. The "Cynegeticon" is usually printed with that of Grætius Faliscus, and four "Eclogues" ascribed to him, with those of Calphurnius. Another poet of the same name and age, but of very inferior merit, wrote a work entitled "Ixcutica," of which some fragments have been published in the "Poetæ Lat. Minor." Moreri.

NEMESIS, in *Mythology*, one of the infernal deities, represented by the ancients as watching for the punishment of the guilty, not only in this world, but also in the other, where she chastises them with the utmost rigour. For this reason she was exhibited with wings, sometimes too with a helm and a wheel, to signify that she pursued the guilty both by sea and land. As she was the daughter of justice, she was, as Ammianus Marcellinus describes her office, appointed to revenge impiety, and at the same time to recompense virtuous actions. Several among the ancients, and some moderns, suppose Nemesis to be the same with Leda, the mother of Castor and Pollux, who obtained that name after her deification, but the more common opinion is, that Nemesis herself was the mother of those two heroes, whom she had by Jupiter, and that Leda was only their nurse. Nemesis was worshipped in several places, as well in Greece as in Italy, even in the Capitol itself; and it has been said that she had a temple at Rome; but her worship was at no place more pompous than at Rhamnus, a town of Attica, where she had a statue ten cubits high of a single stone, and so exquisitely beautiful that it was not inferior to the finest works of Phidias. Anciently the statues of Nemesis were without wings, as we learn from Pausanias, and the inhabitants of Smyrna were the first who gave her any. Pausanias speaks of "Nemefes" in the plural number. The Romans, before they set out for war, offered a sacrifice to Nemesis, probably taking that goddess for Fortune, who ought to accompany and favour warriors.

NEMESIUM, in *Ancient Geography*, a town of Marmarica, placed by Ptolemy between Azicis and Tisarchi.

NEMESIUS, in *Biography*, an eminent ancient Christian philosopher, supposed to have been bishop of Emesa in Phœnicia, and to have flourished towards the close of the fourth century. He was author of a treatise "On the Nature of Man," which has been ascribed, but erroneously, to St. Gregory Nyssen. It refutes the notions of the Manichæans, Eunomians, and Apollinarists, and defends that of Origen concerning the pre-existence of souls. The opinions of the Greek philosophers on the subject of which he treats, he relates with great perspicuity of thought and correctness of language; but it is said to be chiefly curious, as it discovers a degree of acquaintance with phytiology, not at all to be paralleled in any other writers of so early a date. The first Latin version of it was published at Lyons in 1538; it was afterwards published in Greek and Latin, at Antwerp. It is inserted in the second volume of the Auc. Bibl. Patr. The best edition is that of Oxford in 1671, in Greek and Latin, with notes, and a learned preface. Moreri. Enfield's Hist. Phil.

NEMESKO, in *Geography*, a town of Hungary; six miles W. of Ziget.

NEMESTRINUS, in *Mythology*, an ancient divinity who presided over forests, called "Nemora." He was probably the sovereign of the Dryads, Hamadryads, Fauns, Satyrs, and other gods, inhabitants of the woods.

NEMET,



NEMET, in *Geography*, a town of Transilvania, on the river Maros; 12 miles W.N.W. of Hunyad.

NEMETES, in *Ancient Geography*, a people of Germany, who named their capital Nomamagus. In the time of Cæsar, they occupied both sides of the Rhine. They were established along the Rhine, between the Vangiones to the north, and the Triboci to the south.

NEMETH-UJAVAR, or GLUSSINGEN, in *Geography*, a town of Hungary, on the borders of Stiria: it is a populous walled town, having a castle seated on a high rock, detached from all the other mountains. It is delightfully situated among woods, corn-fields, and rising grounds, which are covered with vines; 45 miles S.W. of Raab.

NEMETOBIRGA, in *Ancient Geography*, a town of Spain, in the Tarragonensis, belonging to the Callaici, at some distance N. of the Aquæ Flaviæ, on the route from Breraca to Asturica.

NEMETZ, in *Geography*, a town of Hungary; 14 miles from Cafchau.

NEMI, a town of Campagna di Roma; two miles S. of Albano.

NEMIA, in *Botany*, Berg. Cap. 160; see MANULEA. The name seems to be derived from *νῆμα*, to divide, alluding to the difference between the anthers, the two uppermost of which are roundish, the two lowermost oblong.

NEMINE CONTRADICENTE, i.e. none contradicting it; a term chiefly used in parliament, or any public assembly, when any matter is carried with the consent of all the members.

NEMINPILLY, in *Geography*, a town of Hindoostan, in Myfore; 16 miles N.N.E. of Punganore.

NEMIR, a town of Persia, in Khorasan; 15 miles N. of Terzhiz.

NEMLI, a town of Hindoostan, in Visapour; 20 miles E. of Anamagur.

NEMOROW, a town of Mecklenburg; six miles S.W. of Stargard.

NEMOSSUS, in *Ancient Geography*, an ancient town of the Gauls, and capital of the Arverni. Strabo.

NEMOURS, MARY DE LONGUEVILLE, *Duchess of*, in *Biography*, was daughter of the duke de Longueville, and born in the year 1625. She was married to the duke de Nemours; and wrote "Memoirs of the Court of France during the Minority of Lewis XIV." which are composed with spirit, and with the fidelity of an historian who had an opportunity of becoming well acquainted with the facts recorded. They are commonly united with those of Joly, but have been printed separately. The duchess died at the age of 82, in the year 1707.

NEMOURS, in *Geography*, a town of France, in the department of the Seine and Marne, and chief place of a canton, in the district of Fontainebleau. The place contains 3760, and the canton 6475 inhabitants, on a territory of 200 kilometres, in 16 communes. N. lat. 48° 16'. E. long. 2° 47'.

NEMOURS, a town of Asiatic Turkey, in Natolia, near the sea; 20 miles S. of Adramiti.

NEMTCHITZ, a town of Moravia, in the circle of Olmutz; 12 miles S. of Olmutz.

NEMTSCHITZ, or NEMEZICE, a town of Moravia, in the circle of Brunn; 15 miles from Brunn.

NEMUS, in *Ancient Geography*, a small town of Latium, E. of Aricia; which owed its commencement to a temple erected in honour of Diana Taurica, by an inhabitant of Aricia. The Romans paid great respect to this divinity.

NEN, a town of Hindoostan, in Lahore; 74 miles E.S.E.

of Bullauspour.—Also, a river in the E. riding of the county of York, in Upper Canada, which rises several miles beyond York, and discharges itself into lake Ontario; it abounds with fish.

NENAGH, a post-town of the county of Tipperary, Ireland, is a large, regular, well-built town, situate upon a river which empties itself into lough Deirgeart. There is a handsome old castle, formerly of great strength, called Nenagh Round, and it was the seat of some monastic establishments. It is the chief town of the barony of Upper Ormond, and a military station; and is 75 miles S.W. by W. from Dublin.

NENEEVA, one of the Friendly islands, which is small and low; 29 miles N.E. of Annamooka.

NENESS, a cape on the S.E. coast of Shetland. N. lat. 59° 58'. W. long. 1° 20'.

NENGENGOD, a town of Hindoostan, in Myfore; 20 miles S.S.W. of Seringapatam.

NENIA, or NÆNIA, in the *Ancient Poetry*, a kind of funeral song, sung to the music of flutes, at the obsequies of the dead.

The word comes from the Greek *νῆνις*, on which Scaliger observes, that it should be written in Latin *Nenia*, not *Nenia*.

Authors represent them as bad compositions, sung by hired women-mourners, called *præficia*. The first rise of these *neniæ* is ascribed to the Phrygians.

Guichart notes, that *nenia* was anciently the name of a song, sung by nurses, to lull children asleep; and conjectures it to come from the Hebrew *נִין*, *nin*, child.

In the heathen antiquity, the goddesses of tears and funerals was called *Nenia*, whom some suppose to have given that name to the funeral song; and others to have taken her name from it. Some will have the one, and some the other, formed by onomatopœia, from the sound or voice of those that weep.

NENNE, in *Geography*, a town of Persia, in the province of Irak; 30 miles N.N.E. of Nehavend.

NENNIUS, in *Biography*, an ancient British historian, abbot of Bangor, is generally said to have flourished about the year 620, and to have taken refuge at Chester, at the time of the massacre of the monks at that monastery. This, however, has been controverted, and bishop Nicolson says, that from his own book he appears to have written in the ninth century. He was author of several works, but the only one remaining is his "Historia Britonum," or "Eulogium Britannicæ," which has been printed in Gale's Hist. Brit. Scrip. Oxon. 1691. Great part of this work is supposed to have been compiled, or perhaps transcribed, from the history of one Elborus or Elvodugus.

NENORTOLIK, in *Geography*, an island on the S.W. coast of Greenland. N. lat. 59° 54'. W. long. 45°.

NENSLINGEN, a town of Germany, in the principality of Anspach; 26 miles S.E. of Anspach.

NENUFAR, a river of Natolia, which runs into the sea of Marmora; six miles E. of Mikalidi.

NENUPHAR. The ancient writers on the materia medica have all mentioned a peculiar species of this plant, under the name of *nenuphar indicum*. The roots of this they call *fel*, and Avicenna says, that they have the same virtues with the mandrake.

NENUPHAR, in *Botany*, is also a name used by some authors for the water-lily.

NENUPHARINI, a name given by the adepts to a kind of imaginary spirits which they suppose to inhabit the air, and to direct and govern many things on earth.

NEOCESAREA, in *Ancient Geography*, a town of Pontus,



Pontus, upon the Lycus, N. of Comana, called by different authors Hadrianopolis. Ptolemy places it in the interior of the country between Ablata and Saurania.—Also, a town of Bithynia.—Also, a town of Syria.—Also, a town of Asia, upon the banks of the Euphrates.—Also, a town of Mauritania.

NEOCÆSAREANS, in *Ecclesiastical History*, Christians of Neocæsarea, in Cappadocia, who were the disciples of Theodore, afterwards named Gregory, and called by Jerom a man of apostolical signs and wonders. These Christians were very troublesome to Basil, bishop of Cæsarea, for in divers of his letters, he complains of them that they were all Sabellians, and he laments the strange aversion they had for him. They formed a small church in Neocæsarea, as early as the year 250, to which Gregory made many additions about that period. His church continued stedfast in the faith after his death, which happened either in the year 265 or 270. Near the end of the fourth century, the Neocæsareans were all Christians, having been favoured until that time with pastors, who were men of true worth. These people retained for a long while remarkable impressions of religion; and they had an affection for the primitive simplicity, almost singular at that time, when innovations came apace into the church. They seemed by no means to approve of the common zeal for the monastic life, of which Basil complained. Lardner's Works, vol. iii.

NEOCASTRO, in *Geography*, a town of European Turkey, in the Morea, at the mouth of a river which runs into the Mediterranean; 32 miles N. of Navarin.—Also, a town in Romania, strongly garrisoned, whither Christian prisoners of consequence are sent; 12 miles N. of Constantinople.

NEOCORI, Νεοκορί, among the *Ancients*, persons whose business it was to take care of temples, and other consecrated places. Theodoret (l. iii. c. 16.) mentions two other functions of the Neocori; these are, to stand at the gates of the temples, in order to sprinkle holy water for the purification of those who were entering into them; the other to throw some of the same water upon the meat served up at the emperor's table. They were otherwise called *editui*.

NECENIA, Νεκενία, in *Antiquity*, a festival celebrated in honour of Bacchus, when the new wine was first tasted.

NECETHO, in *Ancient Geography*, a small town of Italy, in Brutium, towards the E., upon the Neætus, at a little distance N. of Croton.

NEOLA, in *Geography*, a country of Africa, N. of the Gambia, and W. of Dentila. N. lat. 12° 30'. W. long. 11° 40'.

NEOLA Koba, a river of Africa, which runs into the Gambia, N. lat. 12° 40'. W. long. 12° 25'.

NEOMAGUS, NOVIMAGUS, or *Noviomagus*, in *Ancient Geography*, a town of the Regni, in the isle of Albion, according to Ptolemy. The Itinerary of Antonine places it between Londinium (London) and Vagniacis (Northfleet). The situation of this station is very uncertain; but Camden, Gale, and Horsley, have agreed in placing it at Woodcote, near Croydon. Mr. Baxter, however, and some other antiquaries, contend for Ravensburn in Kent.

NEOMAGUS, or *Noviomagus Batavorum*, a town of Germania secunda, at the extremity of Gaul. The Peutingerian table places it on the Rhine, between Castra Herculis and Arenatio.

NEOMENIA, Νεομενία, in *Antiquity*. See NUMENIA.

NEOMENIA, in *Chronology*, &c. a term used for the new moon.

Some say, the Jews reckoned two kinds of neomenia, or new moons; the first on the day of her conjunction with the

sun; the second on that of her apparition or phasis; and add, that they celebrated two passovers, on account of the uncertainty which of these days it should be held on.

F. Hardouin, on the contrary, maintains, they had no other neomenia but that of the moon's conjunction with the sun; which it was easy to ascertain by astronomical calculation; whereas the other was liable to mistakes; the moon sometimes not shewing herself till four or five days after conjunction.

NEOMINAS, in *Geography*, a large river on the coast of Peru, discharging itself into the Pacific ocean by two mouths; 12 or 14 leagues N.W. of Bonaventura river. N. lat. 4° 30'.

NEON, in *Ancient Geography*, a town of Greece, in the Phocide, situated on the ridge of Parnassus, called Tithorea. At first a mere fort, it was a considerable town in the time of Plutarch.

NEONE, in *Geography*, a town of European Turkey, in Thessaly; 20 miles W. of Zeiton.

NEONTICHOS, in *Ancient Geography*, a town of the Eolide, placed by Strabo at 20 stadia from Larissa, but Herodotus places it at the distance of 30 stadia E. of that town, near the plain of Hermus. The appellation denotes a new-walled town.—Also, a town of Greece, in the Phocide. Pausanias.—Also, a town of Thrace, on the Propontis.—Also, a town of Asia Minor, in Caria, between Orthosia and Bargassa. Ptol.

NEOPATRA, in *Geography*, a town of European Turkey, in Thessaly; 20 miles W. of Zeiton.

NEOPHYTES, Νεοφυτοί, in the *Primitive Church*, were new Christians; or the heathens newly converted to the faith.

The word signifies a *new plant*; being formed of the Greek νεός, *new*; and φυτόν, *I produce*; q. d. *newly-born*; baptism, whereby they commenced Neophytes, being a kind of new birth.

The fathers never discovered the mysteries of their religion to the Neophytes.

The term Neophyte is still applied to the converts which the missionaries frequently make among the infidels. The Japanese Neophytes, in the latter end of the sixteenth and beginning of the seventeenth century, are said to have shewn prodigies of courage and faith, equal to any known in the primitive church. See CATECHUMEN.

NEOPHYTES has formerly likewise been used to denote new priests, or those first admitted into orders; and sometimes, the novices in monasteries.

NEOPSCO CREEK, in *Geography*, a river of America, in Virginia, which runs into the Potomack, N. lat. 38° 40'. W. long. 77° 19'.

NEOPTOLEMIA, Νεοπτολεμίσια, in *Antiquity*, a festival celebrated by the Delphians with much pomp and splendour, in memory of Neoptolemus, the son of Achilles, who was slain in an attempt to sack Apollo's temple, which he undertook in revenge of his father's death, to which that god was accessory.

NEOTS, ST., in *Geography*, a parish in the hundred of West, and county of Cornwall, England, is situated four miles from Leskeard, and 226 west from London. Its name was derived from Neotus (brother to king Alfred), who obtained the appellation of saint, and was buried in this church: a monastery was founded in honour of him, and subsisted till after the conquest, when, being dispossessed of its lands, it fell to decay, and only its name has descended to the present age. All remains of the ancient church have likewise been long since destroyed: the present parish church, which consists of a nave and two aisles, with a tower at



the west end, is apparently not older than the reign of Henry VI.: the windows, seventeen in number, contain representations, in painted glass, of scripture history, and of the events recorded in the legends of St. Neot and other faints; but most of the windows are much damaged, and the broken panes repaired with plain glass, so that in some instances the designs can hardly be traced. The population of this parish, according to the return in the year 1811, was 1041 persons, inhabiting 173 houses. Some Account of the Church and Windows of St. Neots Cornwall, by the Rev. Mr. Foster. Beauties of England and Wales, vol. ii. Cornwall. The Life of St. Neot, the oldest of all the Brothers to King Alfred, by the Rev. J. Whitaker, 8vo. 1809.

NEOTS, *St.*, a considerable market-town in the hundred of Tofeland, and county of Huntingdon, England, is pleasantly seated on the north bank of the river Ouse. It was anciently called "Enolfesbury," and had a palace, belonging to earl Elfred, which was subsequently converted into a monastery, in honour of St. Neot, whose relics are traditionally said to have been removed hither from St. Neots in Cornwall. The monks of this monastery were dispersed by the Danes; but being restored again by earl Leofric, it continued a priory subordinate to Ely till after the conquest, when the religious were expelled a second time by Gilbert de Clare. Lady Roisa, wife to Richard, the earl's son, replenished it, however, about the year 1113, and granted it, along with the manor, to the abbey of Bec, in Normandy. On the dissolution of alien priories, this house became a "prioratus indigena," and remained so down to the time of Henry VIII., when its revenues were estimated at 256*l.* 1*s.* 3*d.* The ruins of this edifice, now remaining, are very inconsiderable. St. Neots consists of a large market-place, and several respectable streets intersecting each other. The church is a very beautiful building in the pointed style of Henry VIII.'s reign. At the west end rises an elegant tower, 150 feet high. The windows are large, and bear the remains of paintings on the glass. In a chapel, called Jesus chapel, lately laid open to the church, there was formerly a monument, supposed to have once contained the relics of St. Neot, and removed hither from the priory. This town contains, according to the population returns of 1811, 410 houses, and 1988 inhabitants. The market day is Thursday.

On the opposite side of the river, and connected with the town by a large handsome stone-bridge, is the village of Eynebury, which was the scene of an action between the royalists, under lord Holland, and the parliamentary forces, in 1648. The church here has a separate tower on its south-east side; and in the north wall of the chancel is a stone coffin, in which Saar de Quincy is said to have been buried. The parish-register records a curious licence to eat flesh on days not permitted by the statute. Beauties of England and Wales, vol. vii. by E. W. Brayley.

NEOTTIA, in *Botany*, a name which properly belongs to the *Ophrys Nidus-avis* of Linnæus, or Bird's-nest Ophrys, and which originated with Dodonæus, *nestor* signifying a bird's nest. Linnæus retained this plant, along with the *Coralorrhiza*, as a genus, in *Act. Upsal.* ann. 1740, 32, under the name in question; but that genus was afterwards sunk in *Ophrys*. Haller restored it under another appellation, which is now established; see *EPIPACTIS*. *Neottia* therefore being unoccupied, was chosen by Jacquin and Swartz, for the very distinct genus of which we are here to speak, some of whose species had been previously referred to *Ophrys*, others to *Satyrium*. Jacq. Coll. v. 3. 174. Swartz. *Act. Holm.* 1800. p. 224. t. 3. f. I. Tracts on Botany,

151. t. 4. f. 1. Schrad. Neues Journ. v. 1. 49. t. 1. f. I. Willd. Sp. Pl. v. 4. 72. Brown Prod. Nov. Holl. v. 1. 319. Class and order, *Gynandria Monandria*. Nat. Ord. *Orchideæ*.

Gen. Ch. reformed. *Cal.* Perianth of three oblong acute leaves, cohering below, spreading at the point; the two lateral ones elongated at the base, in front, often connected, running down, at the bottom of the lip, on each side, in the form of a spur. *Cor.* Petals two, cohering lengthwise with the upper leaf of the calyx. Nectary a lip proceeding from the lower part of the style, tapering at the base, swelling upwards, embraced by the lateral leaves of the calyx; its margin beardless, rather dilated and spreading. *Stam.* Anther parallel to the style and attached to its back, erect, pointed, of two cells; masses of pollen linear, powdery, granulated, half enclosed in two longitudinal furrows of the style, opposite to the cells of the anther. *Pist.* Germen inferior, oblong, triangular; style erect, cylindrical, with a membranous point; stigma in front, near the oblique summit of the style, convex. *Peric.* Capsule oblong, of one cell, opening between the angles. *Seeds* numerous, minute, tunicate.

Eff. Ch. Calyx-leaves cohering, the two lowermost elongated at the base, embracing the nectary. Corolla ringent; lip without a spur, beardless; petals cohering with the upper calyx-leaf. Anther parallel to the style, inserted at the back.

1. *N. speciosa*. Red-flowered Neottia. Willd. n. 1. Jacq. Ic. Rar. t. 600. Curt. Mag. t. 1374. Andr. Repof. t. 3. (Helleborine foliis liliaceis, radice asphodeli, major; Plum. Ic. 184. t. 190. f. A.)—Lip lanceolate, pointed, undivided. Bractæes longer than the flowers. Stalk with numerous sheathing scales. Leaves elliptic-oblong, glaucous, undulated, somewhat crisped.—Native of the West Indies. It flowered for the first time in this country, at Mongewell, in the stove of the late Hon. Mrs. Barrington, who received the plant from Jamaica, about the year 1793. Mr. Andrews's plant is certainly the same as that of Jacquin, though his plate is, as Willdenow remarks, badly drawn and coloured. Mr. Edwards's in the Bot. Mag. is excellent. This is a very handsome species, distinguished by the large spike of numerous crimson flowers, each of which is subtended by a very long concave bractæa, of the same hue. The numerous leafy scales on the stalk, which is 12 or 18 inches high, are pale or reddish. Each flower, with its germen, is about an inch and half. Root a cluster of oblong, cylindrical, blunt knobs.

2. *N. elata*. Tall Small-flowered Neottia. Willd. n. 2. Swartz. Ind. Occ. 1403. (N. minor; Jacq. Ic. Rar. t. 601. Andr. Repof. t. 376. Redout. Liliac. t. 164. *Satyrium elatum*; Swartz. Prod. 119. Helleborine foliis liliaceis, radice asphodeli, major; Plum. Ic. 184. t. 190.)—Lip obovate, obtuse, somewhat notched. Stalk elongated. Spike downy. Bractæes shorter than the flowers. Leaves elliptical, even at the margin. Native of the West Indies. It flowered in the stove at Chelsea garden, under the care of Mr. Fairbairn, in 1791. The leaves are all radical, numerous, dark-green, even, not crisped, at the edges. Stalk two feet high, with a few lanceolate scales, cylindrical, downy, as well as the spike. Flowers numerous, small and inconspicuous, drooping, turned to one side and rather spirally disposed. Corolla white, or blush-coloured. Lip broad and obtuse, usually with a slight notch. Germen downy.

3. *N. glandulosa*. Glandulous Neottia. Sims in Curt. Mag. t. 842.—Lip inversely heart-shaped, concave, pointed. Cluster downy, of few flowers. Bractæes the length of the partial stalks. Leaves elliptical, bluntish, recurved.—Native



tive of the West Indies. It flowered in Mr. Woodford's stove, in January 1805. The *flowers* being racemose, not spiked, distinguish this from most of the genus; their colour is a mixture of green and white, and they are much more expanded, with broader petals and lip, than those of the last. Their figure is indeed so unlike all the species we have seen, as to excite suspicion of the genus, but we have never examined them alive.

4. *N. lanceolata*. Purple Lanceolate Neottia. Willd. n. 3. (*Limodorum lanceolatum*; Aubl. Guian. v. 2. 821. Helleborine purpurea, aphodeli radice; Plum. Ic. 176. t. 181. f. 2.)—Lip ovate, entire. Stem leafy at the base. Bractæas shorter than the flowers. Leaves elliptic-lanceolate, obtuse, erect.—Native of Guiana and the West Indies. Known only by Plumier's figure. The *spike* and *flowers* are about the size of the first species.

5. *N. diuretica*. Diuretic Neottia. Willd. n. 4. (*Epipactis floribus uno veru dispositis, vulgò Nnil; Feuillée Peruv. v. 2. 726. t. 17.*)—Lip oblong, bluntish, crenate, reflexed. Spike turned one way. Bractæas about as long as the flowers. Leaves radical, linear.—Native of dry barren and mountainous places in Chili. Feuillée says the natives use this plant in retentions of urine, and gravelly disorders, drinking the water in which it has been infused for a night. He speaks of the cylindrical knobs of the *root* as watery, with a sweetish and pungent flavour. The *stalk* is about 18 inches high, clothed with sheathing scales. *Leaves* few, linear, nearly upright, about five inches long, and half an inch wide. *Flowers* white, in a dense spike, all turned to one side, but apparently not in a spiral order.

6. *N. quadridentata*. Four-toothed Neottia. Willd. n. 5. (*Ophrys peruviana; Aubl. Guian. v. 2. 816. Helleborine spiralis, flore albo; Plum. Ic. 178. t. 183. f. 1.*)—Lip rounded, four-toothed. Spike spiral. Flowers turned one way, about equal to the bractæas. Stem leafy at the base. Leaves elliptic-oblong, obtuse, wavy.—Native of Guiana and the West Indies. Known only by Plumier's figure. Willdenow has very properly distinguished this species from the last, with which Aublet confounded it. The *spike* appears to be about a foot long. Lip with four or five teeth. Bractæas enlarged after flowering.

7. *N. spiralis*. Spiral Sweet Neottia, or Ladies' Traces. Willd. n. 6. Swartz. Ind. Occ. 1408. (*Ophrys spiralis; Linn. Sp. Pl. 1340. Sm. Fl. Brit. 934. Engl. Bot. t. 541. Curt. Lond. fasc. 4. t. 59. Fl. Dan. t. 387. Triorchis; Ger. em. 218.*)—Lip ovate, obtuse, crenate. Stalk lateral. Spike spiral, downy. Flowers turned one way. Leaves ovate, spreading, with broad footstalks.—Native of grassy open pastures, in various parts of Europe, flowering in August and September. Dr. Swartz gives its character in his West Indian Flora, but does not speak of this species as found in that part of the world. The knobs of the *root* are thick, almost ovate, downy. Stem spiral, about six inches high, bearing a few sheathing scales. Leaves several, radical, lateral, about an inch long, ovate, spreading in a starry form, glaucous, ribbed. Spike two or three inches long, slender, downy, spiral, the *flowers* turned one way, small, highly fragrant. Calyx, as well as the corolla, white. Lip with a green rib; its margin more or less crenate or crisped. The bractæas are ovate, concave, taper-pointed, imbricated like a braid, whence the old name of Ladies' Traces. The variety  $\beta$  of Willdenow may belong to this species, but his  $\gamma$  and  $\delta$  surely are distinct.

8. *N. æstivalis*. Summer Neottia. (*N. spiralis*  $\gamma$  and  $\delta$ ; Willd. n. 6. (*Ophrys æstivalis; Juss. MSS. Michaux Boreal-Amer. v. 2. 157. Poir. in Lamarck Dict. v. 4. 567. O. spiralis*  $\gamma$ ; Linn. Sp. Pl. 1340. *Orchis spiralis alba*

*odorata, longo angustoque folio; Vaill. Paris 147. Orchidæ astrum æstivum palustre spirale album odoratum; Mich. Gen. 30. t. 26. Epipactis n. 1294; Hall. Hist. v. 2. 152. t. 38. ed. 2. t. 41.*)—Lip obovate, crenate. Stalk central, leafy at the base. Spike spiral, slightly downy. Flowers turned one way. Leaves linear-lanceolate, erect.—In the moist pastures of France, Italy, and Switzerland, flowering in August, earlier than the last, from which it evidently differs in having the *stalk*, or rather *stem*, from the centre of the radical leaves, which are nearly upright, linear-lanceolate, full thrice the length of the last described, and much narrower. The *flowers* too are rather larger; the *spike* less downy; the *stem* usually near a foot high. We never met with this plant in England, but we have it from near Paris; as well as from Switzerland, marked Haller's n. 1294, whose figure indeed accords with it, and not with the real *spiralis*. He seems to have confounded them, nor is it clear that he ever found the true *spiralis* in Switzerland. His citation of Micheli in his *Nomenclator*, p. 117, refers to the name of one, and the plate of the other. Gmelin's plate, Fl. Sib. t. 3. f. 1, seems taken from rather a large specimen of the *æstivalis*.

9. *N. flexuosa*. Bending Indian Neottia.—Lip ovate, wavy, crenate. Stalk central, wavy, leafy at the base. Spike repeatedly spiral, downy. Leaves oblong, spreading.—Gathered by Dr. F. Buchanan, May 1st, 1802, in watery places, at Suembu in Upper Nepal. The *root* consists of longer and much more slender knobs than the last. The leaves are broader, shorter, and more horizontal. The *flowers* are more downy, scarcely half so large, twice as numerous, directed every way, in consequence of the remarkably spiral spike, which makes four or five turns between its base and summit. Their colour is whitish.

10. *N. parviflora*. Small-flowered Neottia.—Lip ovate, wavy, crenate. Stalk central, leafy at the base. Spike slightly spiral, downy. Flowers turned one way. Leaves oblong, spreading.—Gathered by Dr. Buchanan, July 23d, 1802, at Suembu in Upper Nepal. The knobs of the *root* are thicker than in the last-described; *stem* straighter; *flowers* nearly the same size, but rather fewer, in a spike that, though inclined to be spiral, makes but half a turn from top to bottom. The lip is of a bright red, not white. It appears that this species flowers near three months later than the *flexuosa*. Their learned finder was doubtful of their being distinct from the European *N. spiralis*, but though the specific characters between the four species last described, are not very striking in description, the plants when once seen cannot be confounded. When we describe the *flowers* as turned one way, we mean that they follow each other in a close, though somewhat spiral, line, perhaps completing one turn; the circumsolutions not being many times repeated as in our *flexuosa*.

11. *N. tortilis*. Twisted Neottia. Swartz. Ind. Occ. 1406. Willd. n. 7. (*Satyrium spirale; Sw. Prodr. 118.*)—Lip three-lobed. Spike spirally twisted, smooth. Leaves radical, linear, erect, half as long as the stalk.—Gathered by Dr. Swartz, in dry grassy places, on mountains in the western part of Jamaica. He mentions having received the same from North America and China. The knobs of the *root*, in his Jamaica plant, are oblong, round, and smooth. Leaves all radical, almost a foot in length, linear, erect, striated, smooth, sheathing at the base, often withering away before the flowers expand. Stalk two feet high, erect, round, smooth, as thick as a straw of rye, sheathed with a few remote, close, lanceolate, acute scales. Spike rather lax, from three to six inches long, spirally twisted. Flowers drooping, smooth, whitish. Bractæas ovate,



ovate, acute, convex, as in all the neighbouring species. *Lip* reflexed, with three rounded, finely crenate, lobes, the central one largest.

12. *N. cernua*. Drooping Neottia. Swartz. Orchid. n. 5. Willd. n. 8. (*Ophrys cernua*; Linn. Sp. Pl. 1340. Michaux Boreal-Amer. v. 2 158.)—*Lip* oblong, acute, undivided. *Spike* downy. *Flowers* turned every way, deflexed. *Leaves* radical, linear-oblong, bluntish.—Native of various parts of North America, from Hudson's bay to Carolina. *Michaux*. *Root* of numerous, thick, cylindrical knobs. *Leaves* radical, linear, long. *Stalk* twelve or eighteen inches high, erect, smooth, with several long tubular sheaths. *Spike* two or three inches long, downy, of numerous, crowded, whitish, drooping *flowers*, above twice the size of *N. spiralis*, all turned to one side when they first expand, though their common stalk is then very much twisted. It appears, by our dried specimens, that the part in question soon becomes less spiral, and that in consequence the flowers soon point every way.

13. *N. australis*. New Holland Neottia. Brown. Prod. v. 1. 319.—*Lip* oblong, undivided, crisped, with two tongue-like appendages at the base. Lateral lobes of the style longer than the stigma. *Spike* twisted. *Leaves* radical, lanceolate.—Gathered by Mr. Brown near Port Jackson, New South Wales. The knobs of the *root* are oblong, as in most of the genus.

14. *N. adnata*. Close-spurred Neottia. Swartz. Ind. Occ. 1409. Willd. n. 9. (*Satyrium adnatum*; Swartz. Prod. 118.)—*Lip* deflexed, two-lobed; its base decurrent along the germen. *Spike* lax. *Leaves* radical, oblong, with very long footstalks.—Native of shady woods, in the interior parts of Jamaica and Hispaniola, flowering in May. *Root* of numerous, oblong, downy knobs. *Leaves* several, radical, elliptic-oblong, pointed, four or five inches in length, reticulated with veins, smooth; their *footstalks* red, channelled, half a foot long, or more, sheathing at the base. *Stalk* two or three feet high, downy, reddish, with remote, thin, coloured sheaths. *Spike* six or eight inches long. *Flowers* rather scattered, almost erect, greenish white. *Bractees* linear-lanceolate, the length of the *germens*. *Lip* elongated at the base into an obtuse spur, half the length of the germen, to which it is attached, and accompanied by a similar elongation of the two lateral leaves of the *calyx*; its fore-part rounded, deflexed, two-lobed, whitish.

15. *N. orchiboides*. Frosted-flowered Neottia. Swartz. Ind. Occ. 1411. Willd. n. 10. Curt. Mag. t. 1036.—*Lip* lanceolate, pointed, undivided; its base, with the *calyx*, forming a pouch. *Spike* downy. *Leaves* radical, ovato-lanceolate.—Gathered by Dr. Swartz, in very dry grassy fields in Jamaica. It flowered in Mr. Woodford's stove at Rickmanfworth, in May 1807. The colour and size of the *flowers* most resemble the first species, *N. speciosa*, but the *calyx*, *germen*, and *stalks* are, as it were, frosted, with pellucid white dots, and are besides downy. The *leaves* are all radical, ovate or elliptical, tapering at both ends, widely spreading, or recurved, with numerous ribs. *Stalk* a foot or more in height, downy, and purplish near the flowers.

16. *N. repens*. Creeping Neottia. Swartz. Orchid. n. 8. Willd. n. 11. (*Satyrium repens*; Linn. Sp. Pl. 1339. Sm. Fl. Brit. 930. Engl. Bot. t. 289. Jacq. Austr. t. 369. Palma Christi, radice repente; Ger. em. 227.)—*Lip* inflated, with a lanceolate, entire, deflexed point. *Calyx-leaves* lanceolate. *Spikes* downy, spiral. *Leaves* ovate, stalked, reticulated. *Root* creeping, with downy fibres.—Native of alpine fir forests, in Sweden, Siberia, Germany, Switzerland, and Scotland, flowering in

July. The branched, downy, somewhat fleshy *roots* creep among wet moss and decayed leaves, throwing out long horizontal shoots, leafy at the end, and at length taking root there. *Leaves* several, in tufts, ovate, full an inch long, smooth, marked with many ribs and reticulated veins, and often chequered with dark brown, as in Mentzel. Pugil. t. 3. f. 4, 5. *Footstalks* as long as the leaves, broad and sheathing. *Stalk* terminal, from the centre of the leaves, near a span high, round, bearing a few sheaths. *Spike* two or three inches long, downy, spiral, the *flowers* following its direction, and rather drooping. *Bractees* lanceolate, pointed, longer than the germen. *Flowers* flesh-coloured, fragrant, as is the whole plant in some degree, long after it has been dried. *Lip* inflated and almost globular underneath, terminating in a little reddish deflexed point.

17. *N. pubescens*. Downy American Neottia. Willd. n. 12. (*Satyrium repens*; Michaux Boreal-Amer. v. 2. 157.)—*Lip* inflated, with a pointed, deflexed point. *Calyx-leaves* ovate. *Spike* downy. *Flowers* spreading every way. *Leaves* ovate, stalked, reticulated. *Root* creeping, with downy fibres.—Native of North America, from Canada to Florida. We have it from Pennsylvania, but what Mr. Menzies found in Nova Scotia seems rather the chequered variety of *N. repens*, figured in Mentzelius, and in Morison, sect. 12. t. 11. f. 10. The plant of Willdenow and Michaux is taller, with a straight, not spiral, *spike*, the numerous *flowers* rather smaller, pointing every way, and erect, neither turned to one side, nor at all drooping. The *calyx-leaves* are very broad, ovate, or almost orbicular. The point of the inflated *lip* seems very small.

18. *N. calcarata*. Spurred Neottia. Swartz. Ind. Occ. 1413. Willd. n. 13.—*Lip* lanceolate, pointed; decurrent, with the *calyx*, at the base, forming an awl-shaped, curved spur. *Spike* of few flowers. *Leaves* elliptical, much shorter than their footstalks.—Native of shady woods on the mountains of Hispaniola. *Root* of downy, thick, clustered fibres. *Leaves* radical, elliptical, ribbed, smooth, three or four inches long. *Footstalks* much longer than the leaves, erect, sheathing at the base. *Stalk* twelve or eighteen inches high, erect, round, smooth, pale red, bearing several taper-pointed sheaths. *Spike* upright, of a few, large, green, rather distant *flowers*. Upper leaf of the *calyx* erect, concave, keeled, pointed, forming, together with the *petals*, which are but half as long, and partly included within it, a hood or upper lip. The two lateral leaves of the *calyx* are very much elongated at the base, forming, together with the base of the *lip*, a long incurved spur, resembling the real spur of an *Orchis*, but very different in nature. The *lip* itself is lanceolate, taper-pointed, undivided. *Germen* smooth.

19. *N. polystachya*. Branched Red Neottia. Swartz. Ind. Occ. 1415. Willd. n. 14. (*Serapias polystachya*; Swartz. Prod. 119.)—*Lip* ovate, recurved. Cluster compound, terminal. Stem subdivided, jointed.—Native of woods on the high mountains of Clarendon in Jamaica, in a marshy barren soil. *Root* of long, thickish, whorled, brown fibres. *Stem* two or three feet long; round and somewhat branched in the lower part; the branches angular, jointed, as thick as a wheat straw, striated, rather stiff, leafy. *Leaves* alternate, folded and sheathing at the base, oblong, pointed at each end, entire, erect, ribbed, smooth, dark green, a foot in length; their sheaths slightly compressed, striated, each originating from one of the joints of the stem, like those of grasses. *Cluster* compound, supported by a stalk which terminates the stem, and is sometimes accompanied by a short leaf; its branches alternate, each consisting of



of from five to seven pale red drooping *flowers*, on very short stalks. *Lip* ovate, purple, flat, with a recurved point; its base inflated.

20. *N. flava*. Branched Yellow Neottia. Swartz. Ind. Occ. 1417. Willd. n. 15. (*Serapias flava*; Swartz. Prod. 119.)—*Lip* pointed, erect. Clusters compound, axillary. Stem subdivided, jointed.—Gathered by Dr. Swartz, with the last, flowering in January, in marshy woods, on the mountains of Jamaica. The *roots*, *stem*, and *leaves* are like those of that species, but twice or thrice as large. *Clusters* from the sheaths of the terminal *leaves*, alternately branched. *Flowers* drooping all one way, yellow, larger than those of *N. polystachya*. *Lip* lanceolate, erect, not recurved; its base concave, or channelled, embracing the style.

21. *N. acaulis*. Stemless Neottia. Sm. Exot. Bot. v. 2. 91. t. 105.—Stem none. Flowers sessile, solitary, in the bosom of each leaf.—Native of the island of Trinidad, from whence it was obtained by Mr. Evans of Stepney, and flowered in his stove in June 1806. This plant is singular in its genus, and, as far as we know, in its natural order, for having neither *stem* nor *flower-stalk* of any kind. The *root* consists of many thick fibres. The *leaves* are numerous, ovate, glaucous, glittering, pointed, ribbed, wavy, forming a dense tuft; their under side and base brown or purplish; their size and aspect most like the first species. *Flowers* radical, large, sessile, erect, green and white, with an occasional sweet musky scent. *Germen* an inch and a half long; *calyx* half that length; both downy. *Lip* oblong, concave, downy, with a blunt point, and two dilated wavy lateral lobes, striped with green and bordered with white.

Mr. Brown observes that *Orchis strateumatica* of Linnæus belongs to this genus; but we have had no opportunity of examining it. There are some species still undescribed in the herbarium of Sir Joseph Banks; and incomplete specimens of one or two others in our possession, which must be left for future consideration. S.

NEOU, the African name of a tree, found by Adanson at Senegal, which Jussieu refers to the PETROCARYA; see that article and MAMPATA.

NEOUNBENGZEICK, in *Geography*, a town of Ava, on the Irawaddy; 15 miles N. of Prome.

NEOUNDAH, a town of the Birman empire, on the Irawaddy, which has risen on the ruins of Paghan, to which it nearly joins.

NEP, in *Botany*. See NEPETA.

NEPA a word used by naturalists sometimes to express a *scorpion*, and sometimes for a plant, called by the botanists *genista Spartium*.

NEPA, Water-Scorpion, in *Entomology*, a genus of insects of the order Hemiptera: the generic character is this, the snout is inflexed, and antennæ short; it has four wings, folding cross-wise, coriaceous on the upper part; the fore-legs are cheliform; the other four are formed for walking. There are fourteen species included in this genus, which are divided into sections, according as they have no lip, or a short lip, or one that is projecting and round. Two of the species are common to this country.

The insects of this genus belong to the water, and their eggs are likewise deposited in water; they are of an oblong shape, and generally sunk and concealed in the stalk of a bull-rush. When they arrive at their full size, and become complete insects, they are sometimes nearly an inch in length, and nearly half as broad. The antennæ appear in the usual place of the fore-legs; they are armed with a forceps adapted to the purposes for which they are applied. The nepas are, of all animals, the most tyrannical; like wolves, among a

flock of harmless sheep, they destroy a vast number more than their wants require. It has been observed, that if a nepa be placed in a basin of water with thirty or forty worms of the libellula kind, each as large as itself, it will destroy them all in a very short space of time, getting on their backs, and piercing them through the body with the rostrum. These animals, though they live upon the water by day, are capable of taking long flights from one pool or stagnant water to another, in quest of food; this they are probably obliged to attempt from the fierceness of their manners, by which the insects in their vicinity must soon be destroyed. The nepas, so formidable to other creatures, are themselves nevertheless haunted by a little pediculus, which, perhaps, abundantly avenges the injuries that the water-scorpion so frequently commits upon others.

#### A. *Antennæ palmate, and without Lip.*

##### Species.

GRANDIS. Chestnut-brown, variegated with yellow. It inhabits South America. The antennæ are four-cleft, and the divisions are curved. This is the largest species yet known, it measures more than three inches in length. It is said to prey on tadpoles and young frogs.

ANNULATA. The tail of this species is unarmed, roundish, pale brown; the fore-shanks are pale, and annulate with brown. It is found in Coromandel, and is reckoned broader and more round than others.

RUSTICA. Tail unarmed, brown; the lateral and hind-margin of the thorax, and fore-margin of the upper wings, whitish. It is likewise found in Coromandel.

FUSCA. Tail ending in two bristles; scutellum rugged; wings snowy. It inhabits the East Indies. The body of this species is brown; and the tail is as long as the body.

GROSSA. Tail ending in two bristles; body ovate; and in this species the tail is longer than the body. It inhabits Tranquebar.

CINEREA. This is the common water-scorpion, whose specific character is this; tail ending in two bristles, half as long as the body; the body is ovate and brown. It inhabits this country, and many parts of Europe, chiefly on stagnant waters, measuring about an inch in length, and appearing, when the wings are closed, of a dull brownish colour; but when the wings are expanded the body above appears of a bright red colour, with a longitudinal band down the middle; and the lower wings, which are of a transparent white, are decorated with red veins; from the tail proceeds a tubular bifid process or style, nearly of the length of the body, and which appears single on a general view, the two valves of which it consists being generally applied close to each other throughout their length. The animal is of slow motion, and is often found creeping about the shallow parts of ponds. In May, when the weather is warm and favourable, it deposits its eggs on the soft surface of the mud at the bottom of the water. They are of a singular shape, resembling some of the crowned seeds, having an oval body, and an upper part surrounded by seven radiating processes or curved spines; the young, when first hatched, are not more than the eighth of an inch in length. This insect flies only by night, when it wanders about the fields, in the neighbourhood of its native waters. The larvæ and pupæ differ in appearance from the complete insect in having only the rudiments of wings, and being of a paler or yellower colour.

MACULATA. Tail ending in two bristles; the body is black; the thorax and scutellum spotted with ferruginous. This



This is found in the East Indies, and is about half the size of the *N. cinerea*.

*B. Antennæ palmate; Lip very short, and widely emarginate.*  
Species.

**FILIFORMIS.** Tail ending in two bristles, shorter than the body; body linear; legs testaceous; the thighs are annulate, and of a cinereous colour. It inhabits Tranquebar.

\* **LINEARIS.** The tail of this species ends in two bristles, as long as the body; the thorax is of one colour; the fore-shanks have a spine down the middle. The insects of this species have a highly singular aspect, bearing a distant resemblance to some smaller insects of the genera *Mantis* and *Phasma*. It is about an inch and a half long, and the whole animal is extremely slender in proportion to its length. It inhabits the larger kind of stagnant waters, frequenting the shallower parts during the middle of the day, when it may be observed to prey on the smaller water insects. Its motions, too, are singular; often striking out all its legs in a kind of starting manner at intervals. The eggs are smaller than those of the *N. cinerea*, of an oval shape, and furnished with two processes or bristles divaricating from the top of each.

**ELONGATA.** Tail ending in two bristles, flat, and longer than the body; the body is linear; the thorax testaceous, with a brown dorsal line. It inhabits Tranquebar.

*C. Lip projecting, and rounded.*  
Species.

\* **CIMICOIDES.** Abdomen ferrate at the edge; head and thorax varied with yellow and brown. This, at the first appearance, is more like a notonecta than a nepa, the hind-legs being formed for swimming briskly, and furnished with an edging of hairs on the inner sides: it likewise bears a resemblance to the cimex in its broadly ovate shape.

**ÆSTIVALIS.** Abdomen ferrate at the edge; head and thorax white. It inhabits France, and is about half the size of the last.

**NEPÆFORMIS.** Edge of the abdomen entire. It inhabits the South American islands.

**CURSITANS.** The abdomen of this is black, the edge entire; all the legs are formed for running. It is a very small insect, and is found at Kiel.

**NEPAUL, NEPAL, or Nepaul,** in *Geography*, a kingdom of Hindoostan, consisting of an extensive plain in a valley, enclosed in the great range of secondary mountains, which branch out towards the S. and W. from the gigantic ridge of Himalaya and the lofty regions of Tartary. On the eastern side, the possessions of the Ghoorkhali, or present reigning family, are bounded by Bocktan, or the country of the Deb Rajah; to the S.E. they touch upon our districts of Rungamutty and Coochbehar; on the N.E. they are divided from Thibet by the Alpine ridge, in which the passes of Phullak and Kooti are situated. To the southward the Nepaul territories are bounded by the purgumahs of Durbungah, Tirhoot, and Ghempuram. To the S.W. is Bulrampore of Goruckpore, adjoining to which is the tributary principality of Bootwal. To the westward, the Nepaul borders touch on various parts of Oude; and to the N.W. are divided from various districts of Rohilcund by the Almorah hills. To the N.W. they are bounded by the dominions of the rajahs of Serinugur and Siremor, and by parts of Thibet; all of them situated beyond the snowy ridge of Himmaleh. While the Nepaul territories include between their eastern and western limits, as is seen in major Rennell's map, no less a space than twelve geographical degrees, they extend only two degrees from

N. to S., and for the most part exhibit a slip of even less than a degree in breadth. The extensive plain of Nepaul, situated N.E. of Patna, at the distance of ten or eleven days' journey from that city, resembles an amphitheatre covered with populous towns and villages: the circumference of the plain is said to be about 200 miles, somewhat irregular, and surrounded by hills on all sides, so that no person can enter or come out of it without passing the mountains. There are three principal cities in this plain, each of which was the capital of an independent kingdom; viz. **CATH'MANDU**, on the eastern bank of the Bishmatty, about one mile in length, and half a mile in breadth, containing nearly as many temples as houses, and as many idols as inhabitants. The number of houses, according to Col. Kirkpatrick, in Cath'mandu, and its dependant towns and villages, is 22,000; and that of inhabitants in the town itself, allowing ten to a house, about 50,000; and the number of idol deities 2733. The other cities are *Lelit* **PATAN**, or *Patn*; and **BHAGAN**, or *Bhatgong*; which see respectively. Besides these three principal cities, there are many other large and less considerable towns or fortresses, one of which is *Timi* and another *Cipoli*, each of which contains about 8000 houses, and is very populous. (See also **KHIRTPOUR**.) All these towns, both great and small, are well built of brick, three or four stories high, with doors and windows of wood: the streets are paved with brick or stone, with a regular declivity for carrying off the water, but Kirkpatrick says, the streets of Cath'mandu are narrow and filthy; in almost every street of the capital towns are good wells of stone, from which the water passes through several stone-canals for the public benefit. In every town there are square varandas, called "*Pali*," well built, for the accommodation of travellers and the public, and there are many of these in different parts of the country for public use. On the outside of the great towns are small square reservoirs of water, faced with brick, with a good road to walk upon, and a large flight of steps for the convenience of those who choose to bathe.

The most northerly part of Nepaul scarcely lies in a higher parallel of latitude than  $27\frac{1}{2}^{\circ}$ ; and yet this valley enjoys, in certain respects, the climate of some of the southern parts of Europe. Snow, during winter, is sprinkled on the tops of the surrounding mountains for several days, and it sometimes falls in the valley below; and in this season a hoar frost commonly covers the ground, and the standing water of the pools and tanks freezes, but the rivers are never frozen. Nepaul seems to owe its favourable climate to its great elevation; its height above the level of the sea, as indicated by the barometer, not being less than 4000 feet: the mean temperature, during Kirkpatrick's residence towards the close of the year 1792, being, for a small interval of eight days,  $67^{\circ}$ . The seasons are much the same with those of Upper Hindoostan. The rain commences a little earlier, and sets in from the S.E. quarter: it is usually very copious, and ends towards the middle of October, and at this time the rivers are very subject to overflow their banks. On the sides of the mountains there is a considerable variety of temperature; and in three or four days the traveller may exchange, by moving from Noakote to Khenoo, the heat of Bengal for the cold of Russia. The salubrity of the more elevated summits is indicated by the aspect of the inhabitants. The guttural tumours, similar to the goiters of the Alps, and called in Hindoostan "*ghaigha*," and in Nepaul "*ganoo*," to which the inhabitants are subject, are ascribed by many of them to the imagination of their pregnant women, who constantly see the protuberant pouches of monkies, with which part of the country abounds, and which,



which, according to a prevalent superstition, it would be an act of the greatest impiety to dislodge.

It was formerly thought that Nepal contained gold mines; but although this is not the case, it produces almost every other metal; its iron is admirable; but copper scarce and dear. Near Ghoorka there is said to be a considerable mass of rock-crystal; and limestone, as well as slate, abounds every where. However here are no lime-kilns, and the cement employed is mud, which is preferred for their buildings. The cattle, generally speaking, are not much superior to those commonly met with in Bengal and the upper provinces. The honey is excellent; but the vegetables are of the worst kind. A species of yam, called "tooral," and a kind of wild asparagus, denominated "kuraita," form a considerable part of the subsistence of the poor.

The inhabitants consist principally of the two superior classes of Hindoos, and of a race called the "Newars," who are probably of Tartar or Chinese origin. The former are generally dispersed; but the latter are confined almost entirely to the valley of Nepal Proper. The "Dhenwars" and "Mhanjees" are the husbandmen and fishers of the western district; and the "Bhootias" occupy, generally speaking, such parts of the Kucha as are included in the Nepal territories. The "Bhanras" are a sort of separatists from the Bhootias, and are supposed to amount to about 5000. They shave their heads, like the Bhootias; observe many of the religious rites, as well as civil customs, of these idolaters, in a dialect of whose language they are said to preserve their sacred writings. The total population is estimated at about half a million. As Nepal has been governed for many centuries past by Rajapoot princes, and as Hindoos in their various classes have constituted their chief population, it is natural to expect that a general resemblance should subsist, with regard to customs and manners, between this portion of its inhabitants, and the kindred sects established in the adjacent countries. The differences are slighter than might be expected, when it is considered that Nepal is the only Hindoo country that has never been disturbed by any Mussulman power. The Hindoos, however, and the Newars, differ very considerably: the latter are rarely employed in their armies; their occupations are agriculture, arts, and manufactures; they are capable of great labour, and evince a very considerable degree of skill in their mechanical operations. They are, in general, of middle size, with broad shoulders and chests, very stout limbs, round and rather flat faces, small eyes, low and somewhat spreading noses, and open cheerful countenances. At Bhatgong most of the women have a florid tint upon their cheeks, but, for the most part, their complexion, like that of the men, is between a fallow and a copper-colour. The Newar women (like the "Nairs") have as many husbands as they please, being allowed to divorce them often on the slightest pretences. The popular religion of Nepal differs in no respect from the Hinduism established in Bengal, except so far as the secluded nature of the country may have tended to preserve it in a state of greater purity. Father Giuseppe says, that the religion of Nepal is of two kinds; the one ancient, professed by many people who call themselves "Baryesus;" these pluck out all the hair from their heads; their dress is of coarse red woollen cloth, and they wear a cap of the same; they are considered as people of the religious order; and they are prohibited by their religion from marrying, as it is with the Lamas of Thibet, from which country their religion was originally brought; but in Nepal they do not observe this rule, except at their own discretion. They have large monasteries, in which each has a separate apartment; they also observe particular festivals,

the principal of which they call "Yatra," which continues a month, or longer, at the pleasure of the king. The ceremony consists in drawing an idol, called at Lelit-Pattan "Baghero," in a large and richly ornamented car, covered with gilt copper; round the idol stand the king and the principal Baryesus; and thus the vehicle is drawn almost every day through some one of the streets by the inhabitants, who run about beating and playing upon every kind of instrument their country affords, which make an inconceivable noise. The other religion, which is the most common of the two, is that of the Brahmins, or Hinduism, as already stated.

The government of Nepal is despotic. The choutra is the prime minister of the rajah, to whom he is invariably akin. He transacts the business of the country, and for his services he has, besides his jaghires, eight annas on every kaith or rice plantation throughout the country; and these kaiths are subject to various other impositions. The law, and the administration of it, are in an equally imperfect state. The trade of Nepal needs better regulations, in order to render it more extensive. Some of the restraints by which it was shackled were removed by a treaty concluded with the East India company in 1792; but it still languishes under several impolitic restrictions. The exports of Nepal are elephants, elephants' teeth, rice, timber, hides, ginger, terra japonica, turmeric, wax, honey, resin, fruit, pepper, spices, ghee, lamp-oil, and cotton. The duties on articles passing between Thibet and Nepal are enormous. The company import into Nepal woollen goods, chintzes, shawls, raw silk, gold and silver lace, carpets, cutlery, cloves, sandal wood, alum, quicksilver, dyeing woods, tin, zinc, lead, soap, tobacco, coral, &c. &c. &c. The Newars, already mentioned, are almost the only artificers; their cloths are coarse; in iron, copper, and brass, and also in carpentry, they work well; they export some of their brazen articles to the southward; and their cutlery is not contemptible. They gild extremely well, cast bells of a large size; make paper, distil spirits, and prepare fermented liquors. The silver brought into Nepal by way of Thibet must be brought to the mint, as no silver is allowed to pass into Hindoostan; in exchange for his silver, the merchant receives rupees, losing from 10 to 12 per cent. by the transaction, 4 per cent. on account of coinage, and 8 per cent. for alloy. Gold has usually been a monopoly in the hands of government, which is supposed to be rich. Their artillery is contemptible. Their troops are armed with matchlocks, bows and arrows. The regular force consists of from 50 to 60 companies, each containing 140 firelocks; but their discipline is very lax. They are, however, as colonel Kirkpatrick says, brave, and capable of sustaining great hardships.

The Pundits of Nepal are not inferior to their brethren in such branches of science as are cultivated in Hindoostan. Astronomy, in connection with judicial astrology, is said to be their favourite study. In the valley of Nepal, and particularly at Bhatgong, which is represented as the Benares of the Ghorkali territory, a single private library contains 15,000 volumes. The Sanscrit is considerably cultivated by the Nepal Pundits; and besides, there are eight vernacular languages spoken within the dominions of that kingdom. Besides his own immediate estates, there is hardly any division of the Ghorkali conquests, in which the prince has not appropriated a share to himself. Some of these estates are cultivated by husbandmen, with whom he equally divides the produce; others are managed by agents of his own, and tilled by the neighbouring husbandmen, who are obliged to dedicate a certain number of days in the year to his service; and others are farmed out. Many of the kaith lands yield



three harvests, one of wheat, one of rice, and one of an excellent vegetable, called "tori." The sugar-cane is also cultivated in these lands. In the generality of them, land is reckoned to yield from 20 to 30 fold; in fertility not much exceeding that of the best arable land in this island. The plough is scarcely known among the Newars; the prejudice against the use of it originating in their reverence for the bullock, which they never approach but in the form of adoration. The expences of the military establishment are for the most part discharged by assignments of land; though in some instances, the soldier receives his pay, either from the treasury or the granary.

The kingdom of Nepaul is thought to be very ancient; because it has always preserved its peculiar language and independence; but the cause of its ruin has been the dissention which subsists among its three kings. At length the king of Gorcha, taking advantage of the dissentions which prevailed among the other kings of Nepaul, attached to his party many mountain-chiefs, and having possessed himself of the mountains which surround the plain of Nepaul, descended into the flat country; but failing to subdue it by force of arms, he hoped to effect his purpose by causing a famine. Not succeeding in this barbarous mode of conquest, he fomented divisions among the nobles of the three kingdoms of Nepaul, and he gained over to his party some of the principal of these, for which purpose he had about 2000 Brahmins in his service. He then laid siege to Cirtipour, or Kirtipour, a strong town, consisting of about 8000 houses, about a league from Cath'mandu, which having long attempted in vain, he at last obtained by treachery. After the capture of this city, he proceeded against Lelit Pattan; but in the mean while he made himself master of Cath'mandu, in 1768, and then compelled the inhabitants, with their king, to withdraw to the king of Bhatgan. Having gained Lelit Pattan, he got into his possession the persons of the nobility. At the commencement of the year 1769, the king of Gorcha regained the city of Bhatgan, by the same modes of violence and treachery by which he had succeeded in his other conquests; and having thus in four years effected the conquest of Nepaul, he made himself master also of the country of the Ciratas to the east of it, and of other kingdoms, as far as the borders of Coochbehar. After his decease, his eldest son held the government of the whole country; but in about two years afterwards, when he died, a younger brother was requested to accept the government, who began his reign with many dreadful massacres. Asiatic Researches, vol. ii. Kirkpatrick's Account of Nepaul, 4to. 1811.

NEPEAN ISLAND, a small island in the South Pacific ocean, near the S. coast of Norfolk island, about half a mile from Point Hunter.

NEPEAN Sound, a bay on the N.W. coast of North America, in the North Pacific ocean. N. lat. 53° 32'. W. long. 127° 30'.

NEPEAN Township, lies in the eastern district of Upper Canada, being the eighth township in ascending the Ottawa river, and the first on the W. side of the river Rideau.

NEPENTHE, or NEPENTHES, *Νηπενθης*, formed of the privative *ν*, non, or *absque*, and *πενθος*, *luctus*, sorrow, in Antiquity, a kind of magic potion, which made persons forget all their pains and misfortunes.

The nepenthe, mentioned in ancient authors, was the juice or infusion of a plant, now unknown: Homer says it was a plant of Egypt; and adds, that Helena made use of it to charm her hoffs, and make them forget their pains.

Some authors say it was the plant we call *helenium*; others *bugloss*, whose juice infused in wine has this effect. M. Petit has a dissertation on the ancient nepenthe.

NEPENTHE, in *Pharmacy*, is a name given to a kind of opiate, contrived by Theo. Zwingerus, from the great opinion he had of his giving ease in all manner of pain.

NEPENTHES, in *Botany*, a name adopted by Linnæus, or rather Breynius, from the ancient Greeks, which, being formed of the negative, *ν*, and *πενθος*, *grief*, expresses a plant furnished with the power of driving away care, in which sense Homer uses the word. The Borage and the Elecampane have been supposed to possess this valuable property, and the above name has been applied to them, or to some potation in whose composition they had a share. The *Nepenthes* of Linnæus is an herb, whose leaves bear a singular pitcher-like vessel, into which a pure and sweet water is distilled through their stalks, in great abundance; and this liquor might, in some circumstances, prove a welcome refreshment to travellers. We can give no further explanation of the matter.—Linn. Gen. 465. Schreb. 709. Mart. Mill. Dict. v. 3. Juss. 444. Poir. in Lam. Dict. v. 4. 458. Gært. t. 83.—Class and order, *Dioecia Monadelphia*. Nat. Ord. uncertain. Jussieu well remarks that it has no affinity to any other genus.

Gen. Ch. Male, *Cal.* Perianth of one leaf, coriaceous, in four deep, spreading, ovate, nearly equal segments, coloured on the inside. *Cor.* none. *Stam.* Filament one, columnar, cylindrical, erect, rather shorter than the calyx; anthers several, (fifteen or more), collected into a globular head, oblong, recurved.

Female, on a separate plant, *Cal.* as in the male, permanent. *Cor.* none. *Pist.* Germen superior, sessile, ovate, with four furrows; style none; stigma large, peltate, four-lobed, each lobe marked with a hollow, permanent. *Peric.* Capsule oblong, columnar, abrupt, quadrangular, furrowed at the sides, of four cells and four valves, bursting at the angles, each valve crowned with one lobe of the stigma; partitions from the centre of the valves. *Seeds* numerous, oval, each enclosed in a long, membranous, angular tunic, tapering at both ends, inserted into the partitions in two rows, obliquely imbricated.

Ess. Ch. Male, Calyx in four deep segments. Corolla none. Anthers numerous, in a round head.

Female. Cal. and Cor. as in the male. Stigma sessile. Capsule superior, of four cells and four valves. Seeds numerous, tunicated.

Obs. Linnæus greatly erred in referring this genus to *Gynandria Tetrandria*, as it answers neither to that class nor order. Koenig first ascertained it to be dioecious. Schreber describes the anthers as single-celled, of which we cannot satisfy ourselves.

1. *N. distillatoria*. Linn. Sp. Pl. 1354. (*N. zeylanicum*, flore minore; Breyn. Prod. 85. *Cantharifera*; Rumph. Amboin. v. 5. 121. t. 59. f. 2. *Bandura zeylanica*; Burm. Zeyl. 42. t. 17. *Utricularia vegetabilis*, *zeylonensium* *Bandura cingalensis* dicta; Pluk. Phyt. t. 237. f. 3.)—Native of Ceylon, Amboyna and Madagascar. *Root* perennial. *Stems* erect, rather zigzag, simple, three or four feet high, round, smooth, leafy; very spongy and vascular internally. *Leaves* alternate, elliptic-oblong, smooth, entire, with one principal rib and several small ones more or less parallel to it; tapering, and clasping the stem, at their base; each terminating in a long twisted stalk, which bears an oblong, membranous, ribbed, upright bag, finely crenate at the margin, and closed by an orbicular lid, attached at one side. *Flowers* very numerous, silky or downy externally, in a long, terminal, simple or compound cluster.

M. Poir. has distinguished the Madagascar plant as a separate species, by the smoothness of the edge of the vessel at the end of the leaf. In our specimens from that country,



as well as from Amboyna and Ceylon, the part in question is uniformly crenate. Perhaps the cluster of flowers being simple or compound may indicate a specific difference, but we perceive gradations that lead us to hesitate. The lateral ribs of the leaves too vary in distinctness and direction. The pitcher at their ends is one of the most curious appendages to leaves. It holds two ounces or more of clear water, distilled through the highly vascular stalks, and according to Rumphius is the refuge of a small aquatic shrimp.

NÉPER, or NAPIER, JOHN, baron of Merchiston, in *Biography*, inventor of the arithmetic of logarithms, was the eldest son of sir Archibald Neper of Merchiston, and born in the year 1550. He was educated with great care, and after going through the ordinary courses of philosophy at the university of St. Andrew's, he made the tour of France, Italy, and Germany. Upon his return home his talents and acquirements rendered him conspicuous, and might have raised him to the highest offices of state; but his love of science led him to decline all civil employments, and the bustle of the court, and to retire from the world to pursue literary researches, in which he made uncommon progress. Mathematics were his chief delight, next to the study of the holy scriptures. In every pursuit to which he applied himself he quickly discovered the most extensive knowledge and profound penetration. His work entitled "Plain Discovery of the Revelation of St. John," was published in 1593, and gives sufficient evidence that the author was accustomed to the most acute and diligent investigation, though the progress of time has shewn that his calculations proceeded upon false data. This work obtained for Mr. Neper a high reputation at home and abroad, and it was translated into several languages. The French edition was eagerly bought up by the Protestants in France, on account of the zeal and erudition employed by the author to prove the pope to be antichrist. But what immortalized his name was his fortunate discovery of logarithms, and their application to all trigonometrical calculations, by which improvements in the sciences of astronomy, navigation, &c. have been wonderfully facilitated. The attachment of Mr. Neper to astronomy and spherical trigonometry led him to make many numeral calculations of triangles, with sines, tangents, &c. These, at first being expressed in large numbers, occasioned a great deal of labour and trouble: to shorten the operations many contrivances were resorted to, and some ingenious contrivances were invented, particularly the computation by NEPER'S-RODS, which see. At length, the most complete one of logarithms was discovered in the actual construction of a large table of numbers in arithmetical progression, adapted to a set of as many others in geometrical progression. (See LOGARITHMS.) Neper published his invention in 1614, under the title of "Logarithmorum Canonis Descriptio," containing a large canon of logarithms, with the description and uses of them; but the mode of their construction was still concealed. As soon as the inventor had communicated this discovery to Mr. Briggs, the mathematical professor of Gresham college, the latter set about the application of the rules in his "Imitatio Nepeireæ," and in a letter which he wrote to the celebrated Usher in the same year, already mentioned, he says, "Napier, lord of Marinkilton, hath set my head and hands at work with his new and admirable logarithms. I hope to see him this summer, if it please God; for I never saw a book which pleased me better, and made me more wonder. Briggs was too great a man to indulge the spirit of envy:" so far, indeed, was he removed from a feeling of that nature, that he afforded every facility to the reception of Neper's work, teaching the nature of the logarithms in his public lectures, and, at

the same time, recommending a change in the scale of them, which he submitted to lord Neper. During a subsequent visit to lord Neper these two friends agreed upon a form, according to which the baron strongly urged Mr. Briggs to proceed with his computation, and hence they are denominated Briggs's logarithms. To Neper science is greatly indebted for considerable improvements in spherical trigonometry, particularly by his universal rule, or general theorem for the solution of all cases of spherical triangles, which is commonly known by the title of "The five circular Parts." He prepared for the press his "Construction of Logarithms," and his "Rabdology and Promptuary of Multiplication," consisting of instruments and tables for the more easy performance of the arithmetical operations of multiplication, division, &c. Neper died in the year 1617, when he was in the sixty-eighth year of his age. To him Kepler dedicated his "Ephemerides," regarding him as the greatest man of the age, in that particular department to which he applied his talents. Lord Buchan, in his account of the life, writings, and inventions of our author, says, "If we consider that Neper's discovery was not, like those of Kepler or of Newton, connected with any analogies or coincidences which might have led to it, but the fruit of unassisted reason and science, we shall be vindicated in placing him in one of the highest niches in the temple of Fame." Neper was twice married, and left behind him a numerous issue. His only son, by his first lady, Archibald, a person of fine parts and learning, was raised to be a privy counsellor by James VI., under whose reign he held the several offices of treasurer-depute, justice-clerk, and senator of the college of justice; and he was promoted by Charles I. of England to the peerage, by the title of lord Napier. "In his family," says lord Buchan, "he (Neper) seems to have been uncommonly fortunate, for his eldest son became learned and eminent, even in his father's lifetime; his third was a pupil of his own in mathematics, to whom he consigned the care of publishing his posthumous works; and losing none of his children by death, he lost all his daughters by respectable and honourable marriages." See Account of the Life, &c. of John Napier, by the earl of Buchan and Walter Minto.

NEPER'S, NAIPER'S, or NAPIER'S, BONES, an instrument, by which multiplication and division of large numbers are much facilitated and expedited; so called from its inventor J. Neper, baron of Merchiston, in Scotland.

*Construction of Neper's Bones.*—Five rods, plates, or lamellæ, are provided of wood, metal, horn, pasteboard, or other matter (*Plate I. Algebra, fig. 7.*) of an oblong form, and divided each into nine little squares; each of which is resolved into two triangles by diagonals.

In these little squares are written the numbers of the multiplication-table; in such manner as that the units, or right-hand figures, are found in the right-hand triangle; and the tens, or the left-hand figures, in the left-hand triangle; as in the figure.

*Use of Neper's Bones in Multiplication.*—To multiply any given number by another; dispose the lamellæ in such manner, as that the top figures may exhibit the multiplicand; and to these, on the left-hand, join the lamella of units; in which seek the right-hand figure of the multiplicator: and the numbers corresponding thereto, in the squares of the other lamellæ, write out by adding the several numbers, occurring in the same rhomb together, and their sums. After the same manner write out the numbers corresponding to the other figures of the multiplicator; let them be disposed under one another, as in the common multiplication, and lastly, add the several numbers into one sum.



For example; suppose the multiplicand 5978, and the multiplier 937. From the outermost triangle on the right-hand (Plate I. *Algebra*, fig. 8.), which corresponds to the right-hand figure of the multiplier 7, write out the figure 6, placing it under the line. In the next rhomb, towards the left, add 9 and 5; their sum being 14, write the right-hand figure, viz. 4, against 6; carrying the left-hand figure, 1, to 4 and 3, which are found in the next rhomb. The sum 8, join to 46, already put down; after the same manner in the last rhomb, add 6 and 5, the latter figure of the sum 11, put down as before, and carry 1 to the 3 found in the left-hand triangle; the sum 4 join as before, on the left of 1846: thus you will have the factum of 7 into 5978; and after the same manner will you have the factum of the multiplicand, into the other figures of the multiplier: the whole added together gives the whole product.

*Use of Neper's Bones in Division.*—Dispose the lamellæ so, as that the uppermost figures may exhibit the divisor; to these, on the left-hand, join the lamella of units. Descend under the divisor, till you meet those figures of the dividend, wherein it is first required, how oft the divisor is found, or at least the next less number, which is to be subtracted from the dividend; the number corresponding to this, in the place of units, write down for a quotient. By determining the other parts of the quotient after the same manner, the divisions will be completed.

For example; suppose the dividend 5601386, and the divisor 5978; since it is first asked how often 5978 is found in 56013, descend under the divisor (Plate I. *Algeb.* fig. 9.) till in the lowest series you find the number 53802, approaching nearest to 56013; the former whereof is to be subtracted out of the latter, and the figure 9 corresponding thereto in the lamella of units write down for the quotient. To the remainder. 2211, join the following figure of the divisor, 8; and the number 17934 being found, as before, to be the next less number thereto, the corresponding number in the lamella of units, 3, is to be written down for the quotient; and the subtraction to be continued as before. After the same manner the third and last figure of the quotient will be found to be 7; and the whole 937.

NEPETA, in *Botany*, supposed to be the plant of Pliny which bears that name, and said to be derived from *nepa*, a scorpion, because it was supposed an efficacious remedy for the bite of that animal. Linnæus thought that the name originated from a town in Italy, between Rome and Viterbo. Linn. Gen. 289. Schreb. 386 Willd. Sp. Pl. v. 3. 49. Mart. Mill. Dict. v. 3. Sm. Fl. Brit. 603. Prodr. Fl. Græc. v. 1. 398. Ait. Hort. Kew. ed. 2. v. 3. 377. Michaux. Boreal-Amer. v. 2. 2. Juss. 113. Lamarck Dict. v. 1. 709. Illustr. t. 502. (Cataria; Tournef. t. 95.)—Class and order, *Didynamia Gymnospermia*. Nat. Ord. *Verticillatæ*, Linn. *Labiata*, Juss.

Gen. Ch. Cal. Perianth inferior, of one leaf, tubular, cylindrical, throat five-toothed, acute, erect; upper teeth longer; lower more spreading. Cor. of one petal, ringent; tube cylindrical, incurved; limb gaping; throat spreading, heart-shaped, terminating in two, reflexed, obtuse, very short segments; upper lip erect, roundish, emarginate; lower roundish, concave, larger, undivided, notched. Stam. Filaments four, awl-shaped, situated under the upper lip,

5978  
937  
41846  
17934  
53802  
5601386

approximated, two of them shorter; anthers incumbent. Pist. Germen superior, four-cleft; style thread-shaped, in length and position like the stamens; stigma cloven, acute. Peric. none, except the upright, permanent calyx which envelopes the seeds. Seeds four, nearly ovate.

Obs. If the segments which border the throat be considered as part of the lower lip, it will then become three-lobed.

Eff. Ch. Corolla with the middle segment of its lower lip notched; orifice with a reflexed margin. Stamens approaching each other.

1. *N. Cataria*. Nep. or Cat-mint. Linn. Sp. Pl. 796. Engl. Bot. t. 137. Fl. Dan. t. 580. (*Mentha felina*, seu *Cattaria*; Ger. em. 682.)—Flowers spiked; the whorls slightly pedunculated. Leaves on footstalks, heart-shaped, with tooth-like serratures.—A native of most parts of Europe about hedges or road-sides, in a chalky or gravelly soil, but not very common in England. It flowers in July and August. Root perennial. Stem about a yard high, erect, square. Leaves opposite, on stalks, deflexed or spreading, heart-shaped, acute, unequally serrated, rugose. Spike obtuse, whorled, many-flowered, the lower whorls pedunculated, leafy. Calyx veined, with bristly, nearly equal teeth. Corolla white, with a reddish or crimson-dotted lip.

The whole herb is covered with a very soft, hoary, velvet-like downiness, and has a strongly pungent, aromatic odour, like penny-royal or Valerian, that is peculiarly grateful to cats, whence its specific and English names. These animals are so fond of this species of *Nepeta*, especially when it is withering or bruised, that it is almost impossible to keep them from it, after being transplanted. Ray and Miller both assert however, that cats will never meddle with such plants as are raised from seed. Hence the old saying,

“ If you set it,  
The cats will eat it;  
If you sow it,  
The cats don't know it.”

*N. Cataria* β, which Miller makes a species and calls *N. minor*, grows in Italy and the south of France. It is about half the size of the original species. The stalks are more slender, and their joints further asunder. Leaves narrower. Whorls more distant, and the whole plant whiter.

2. *N. angustifolia*. Narrow-leaved Cat-mint. Willd. n. 2. Vahl. Symb. p. 1. 41.—Flowers in spiked corymbs, on stalks. Leaves lanceolate, rugose, downy, obtusely serrated.—A native of the province of Arragon in Spain. It flowers at Kew in June and July. The whole plant is hoary with down. Stem about a foot high, erect, branched. Leaves stalked, half an inch long, narrow, obtuse. Flowers stalked, opposite, forming an oblong, compact, spiked corymb, accompanied by small, linear bractæas.

3. *N. crispa*. Curled Cat-mint. Willd. n. 3. (*N. racemosa*; Lam. Dict. n. 12.)—Flowers in whorls, forming an interrupted spike. Leaves stalked, heart-shaped, toothed, rugose, hoary. All we know of this species is from Willdenow, who says that it is extremely beautiful. Stem more than a foot high, branched, ascending. Leaves opposite, on longish stalks, scarcely an inch long, heart-shaped, obtuse, unequally toothed, undulated and curled or crisped, hoary with soft down. Flowers composing a terminal, interrupted, clustered, whorled spike, of a blue colour, few in a whorl. Bractæas bristle-shaped, hairy.

4. *N. heliotropifolia*. Turnsole-leaved Cat-mint. Willd. n. 3. Lamarck Dict. n. 14. (*Cataria orientalis*, minor, foliis *Heliotropii*; Tourn. Cor. 13.)—Flowers about five



## NEPETA.

in a tuft, on stalks. Leaves ovato-oblong, entire, rather downy.—Native of the East. Stem rather more than a foot in height, very much branched and forked. Leaves whitish-green. Corymb terminal, small, forked, consisting of five flowers, the central one sessile, the rest on stalks. We are not acquainted with any figure of these three last species.

5. *N. pannonica*. Hungarian Cat-mint. Linn. Sp. Pl. 797. Jacq. Austr. v. 2. t. 129.—Flowers in panicles. Leaves on stalks, heart-shaped, slightly notched.—Native of Austria, Hungary, and Siberia. It flowers from August to October. Root perennial, branched, knotty. Stems numerous, branched, three or four feet in height, channelled, smoothish. Lower leaves on long stalks, upper on short ones; all opposite. Clusters paniced, axillary and opposite, containing about twenty, reddish, elegantly-dotted flowers. Seeds black.

6. *N. carulea*. Blue Cat-mint. Willd. n. 6. Ait. Hort. Kew. ed. 2. v. 3. 378.—Cymes stalked, many-flowered, hairy. Leaves oblong, heart-shaped, villose, nearly sessile. Lateral lobes of the corolla reflexed.—Introduced at Kew in 1777, by Dr. Ortega, where it flowers in May and June; but from whence is unknown. Willdenow and Martyn adopt it solely from the *Hortus Kewensis*, without referring to any specimen, figure, or description of it.

7. *N. violacea*. Violet-coloured Cat-mint. Linn. Sp. Pl. 797. (*N. montana*, *purpurea*, major, *sparsa* spica; Barrel. Ic. 601. Bocc. Mus. v. 2. 46. t. 36.)—Cymes stalked, many-flowered, beset with fine hairs. Leaves slightly stalked, almost naked. Lateral lobes of the corolla spreading.—Native of Spain, flowering from July to September. Stems two feet high, purple, with a few slender branches coming out of their sides. Leaves indented on their edges. Flowers in roundish whorls, pedunculated, blue; varying occasionally to white. Scopoli says the stem is frequently five or six feet high.

8. *N. japonica*. Japan Cat-mint. Willd. n. 9. (*N. incana*; Thunb. Jap. 244.)—Flowers in axillary panicles. Leaves stalked, ovate, notched, downy.—Native of Japan, on the highest mountains. It flowers in October and November. Stem five or six inches long, herbaceous, decumbent, erect, downy. Leaves acute, downy on both sides, but whiter underneath, gradually smaller on the upper part of the stem. Flowers in axillary panicles, in which respect it differs from *N. Nepetella*, as well as in having ovate, not heart-shaped, leaves.

9. *N. incana*. Hoary Cat-mint. Willd. n. 8. Ait. Hort. Kew. ed. 2. v. 3. 379. (*N. teucrioides*; Lamarck Dict. n. 13.)—Cymes stalked, many-flowered. Leaves stalked, oblong, somewhat heart-shaped, notched, downy.—Native of the East? Cultivated at Chelsea in 1723. Some have thought it the same as the last species.

10. *N. ucranica*. Ukranian Cat-mint. Linn. Sp. Pl. 797. (*Cataria betonica* folio angustiore, flore cærulecente; Gerb. Tan. 87.—Flowers in panicles. Leaves sessile, lanceolate, serrated, naked.—Native of Muscovy. Introduced at Kew in 1789 by Dr. Pitcairn, where it flowers in July and August. We know not of any figure or description of this species.

11. *N. Nepetella*. Small Cat-mint. Linn. Sp. Pl. 797. Willd. n. 11. Allion. Pedem. v. 1. 37. t. 2. f. 1.—Leaves lanceolate, heart-shaped, at the base, toothed, downy. Clusters compound, each branch bearing about five flowers.—Native of the South of Europe. It flowers from July to September.—This species greatly resembles *N. cataria* in habit, being about one-third of its size. Leaves very narrow, acutely sinuated or toothed. Flowers in loose clusters,

as in *N. violacea* but not so numerous, when fresh of a red colour, not white or blue. Bractæas very narrow, spreading.

12. *N. nuda*. Naked or Spanish Cat-mint. Linn. Sp. Pl. 797. Jacq. Austr. t. 24. (*Cataria hispanica*, *betonica* folio angustiori, flore cæruleo; item flore albo; Tourn. Inst. 202.)—Leaves heart-shaped, nearly sessile, serrated. Clusters whorled, naked.—Native of Spain, and of Greece on Mount Parnassus, flowering from June to August. Stems two feet high, smooth, straight, furrowed, the older ones dark purple. Leaves like those of *Stachys palustris*, blunt, veined, naked, rugged on both sides. Clusters crossing each other. Flowers distinct. Corolla reddish or white, dotted with purple; according to Haller blue or white. Krocker is of opinion that this and *ucranica* may be the same species.

13. *N. melissifolia*. Balm-leaved Cat-mint. Willd. n. 13. (*Cataria cretica melissæ folio aphodeli radice*; Tourn. Cor. 13.)—Leaves on stalks, heart-shaped, serrated. Whorls pedunculated, corymbose. Calyx long, striated.—Native of the island of Candia, where it flowers in July and August. Root composed of a bundle of spindle-shaped knobs. Stem a foot and half high, square, downy. Leaves on stalks, heart-shaped, largely toothed as in *Erysimum Alliaria*. Whorls stalked, forming a terminal cluster. Corolla blue, its under lip dotted with red.

14. *N. hirsuta*. Hairy Cat-mint. Linn. Sp. Pl. 798. Hort. Cliff. 311.—Flowers in whorled, sessile spikes, whorls downy. Native of Sicily, and, according to Loureiro, of Cochinchina. Stalks about two feet high, branching from the bottom. Leaves heart-shaped, obtuse, somewhat indented, on rather long stalks. Flowers in whorled spikes, separate, sessile, covered with a hoary down.

15. *N. italica*. Italian Cat-mint. Linn. Sp. Pl. 798. Jacq. Hort. Vind. t. 112. (*Cataria minor alpina*; Tourn. Inst. 202.)—Flowers sessile, in whorled spikes. Bractæas lanceolate, the length of the calyx. Leaves stalked.—Found in Italy and Greece, on hills in the neighbourhood of Athens. Stalks about 18 inches high, sparingly branched. Whorls of flowers distant, nearly sessile. Leaves short, oval, heart-shaped, crenate. Corolla white. The whole herb is hoary and strong-scented.

16. *N. longiflora*. Long-flowered Cat-mint. Ait. Hort. Kew. ed. 2. v. 3. 378. Ventenat Jardin de Cels. t. 66.—Cymes distant, stalked, few-flowered. Leaves heart-shaped, obtuse, notched, glandular beneath; floral ones all sessile. Tube of the corolla twice as long as the calyx.—Native of Persia. Root fibrous. Stem a foot and half high, square, branched. Leaves opposite, stalked, rugged. Flowers a little drooping, stalked, of an azure blue.

17. *N. Mussini*. Scollop'd-leav'd Cat-mint. Marsch. Taur-Caucas. v. 2. 39. (*N. longiflora*; Sims in Bot. Mag. t. 923.)—Cymes stalked, lowermost distant. Leaves heart-shaped, obtuse, downy, notched, rugose, not glandular; floral ones mostly stalked. Native of Siberia. It flowers from May through the whole summer. Stem rather shrubby, decumbent, branched, square, with obtuse angles. Leaves opposite, on longish stalks, hoary; upper ones sessile. Flowers whorled, three to five on a stalk, of a very rich light-purple colour. In young plants the leaves are rounder and less hoary.

18. *N. multibracteata*. Bracteated Cat-mint. Willd. n. 16. Desfont. Atlant. v. 2. 11. t. 123.—Flowers sessile, in whorled spikes. Bractæas lanceolate, longer than the calyx, downy. Leaves stalked, hairy beneath.—Found upon Mount Atlas. Stem erect, slightly branched, square. Leaves heart-shaped, stalked; upper ones sessile, very distant. Flowers whorled, forming a dense spike. Bractæas very



numerous and conspicuous, violet-coloured. This is nearly allied in habit to *N. italica*.

19. *N. reticulata*. Netted Cat-mint. Willd. n. 17. Desfont. Atlant. v. 2. 12. t. 124.—Spikes terminal. Bractæas oblong, acute, with reticulated veins, coloured. Leaves lanceolate, heart-shaped at the base, downy. Lateral lobes of the corolla reflexed.—Found upon Mount Atlas. Stem hairy, furrowed, obtusely square. Leaves sessile, notched. Corolla pale purple. Bractæas large, ovate, pale, reticulated, frequently violet-coloured at the margin.

20. *N. tuberosa*. Tuberous-rooted Cat-mint. Linn. Sp. Pl. 798. (*N. tuberosa violacea spicata minor hispanica*; Barrel. Ic. t. 602.)—Spikes terminal, sessile. Bractæas ovate, coloured. Upper leaves sessile.—Native of Spain and Portugal. Stem erect, furrowed, branched at the upper part. Leaves smooth, serrated. Flowers sessile, small, purple. Bractæas veined, entire, downy. Desfontaines observed a variety with downy leaves, and uncoloured bractæas.

21. *N. lanata*. Woolly Cat-mint. Willd. n. 19. Jacq. Obs. v. 3. 21. t. 75.—Spikes terminal. Bractæas ovate, nerved, rugged, dry and membranous. Leaves oblong, heart-shaped, villose. Lateral lobes of the corolla spreading.—Native of the South of Europe. Root fleshy, composed of many spindle-shaped tubes. Stems from one to two feet in height, viscid and hairy. Leaves bluish, notched, strongly scented. Flowers in a spike, about seven on a stalk, pale purple.

22. *N. Scorditis*. Cretan Cat-mint. Linn. Sp. Pl. 798. Amoen. Acad. v. 4. 317.—Spikes sessile, terminal. Bractæas somewhat heart-shaped, villose. Leaves heart-shaped, obtuse.—Native of Crete. Stem a foot high, hairy. Leaves opposite, downy thickish. Flowers about five together, white, accompanied by an ovate, pointed bractæa.

23. *N. virginica*. American Cat-mint. Linn. Sp. Pl. 799. (*Clinopodium amarici folio, floribus albis*; Pluk. Alm. 110. t. 85. f. 2.)—Tufts terminal. Stamens the length of the flower. Leaves lanceolate.—Native of Virginia. Stems two feet high. Leaves hairy, resembling those of Sweet Marjoram (*Origanum*) but larger. Flowers whorled, forming a terminal tuft, of a pale flesh colour. The lower lip of the corolla is serrated but not concave.

24. *N. malabarica*. Malabar Cat-mint. Linn. Mant. 566. *N. malabarica*; Moris. Hist. v. 3. 415. (Carim-tumba; Rheed. Mal. v. 10. 185. t. 93.)—Spike whorled. Bractæas thread-shaped. Leaves lanceolate, entire at the lower part.—Found originally by Koenig on the Malabar coast. Stems erect, obtusely angular, downy. Leaves stalked, ovato-lanceolate. Flowers whorled, distant, forming an interrupted spike, pale violet-coloured.

25. *N. amboinica*. Amboina Cat-mint. Linn. Suppl. 273. Willd. n. 24.—Leaves heart-shaped, obtuse, notched. Bractæas ovate.—Native of Amboina. Stem rather shrubby. Branches erect, downy, purplish below. Leaves opposite, stalked, very soft with down. Flowers whorled, of a violet and white colour.

26. *N. madagascariensis*. Madagascar Cat-mint. Willd. n. 25. Lamarck Dict. v. 1. 712. (Kurka; Rheed. Mal. v. 11. 49. t. 25.)—Leaves stalked, ovate or roundish, notched, rather hairy. Cluster terminal, naked.—Native of the islands of Mauritius and Madagascar. Root fibrous and tuberous. Stem a foot high, herbaceous, slightly branched, downy. Leaves soft, green. Flowers of a reddish-violet colour.—The root is like a turnip in flavour, and is eaten by the natives.

27. *N. multifida*. Perennial Siberian Cat-mint. Linn. Sp. Pl. 799. (*N. lavandulacea*; Linn. Suppl. 273.)—Flowers in spikes. Leaves pinnatifid, entire.—Native of

Siberia. Stem erect, not branched. Leaves stalked; upper one sessile, oblong, three, four, or five-lobed. Flowers very small, white or purplish, in a terminal, sessile spike.

28. *N. botryoides*. Annual Siberian Cat-mint. Willd. n. 27. (*N. multifida*; Linn. Suppl. 273.)—Flowers in spikes. Leaves bipinnate, linear, their segments nearly equal.—Native of Siberia. Stem erect, square. Leaves naked, linear, heart-shaped. Spike terminal, hexagonal, sessile. Flowers small, white.

*N. indica*, Linn. Sp. Pl. 799. See *LAVANDULA carnosa*.

*N. pectinata*, Linn. Sp. Pl. 799. See *BYSTROPOGON pectinatum*.

NEPETA, in Gardening, comprises plants of the herbaceous perennial kind, of which the species cultivated are, the common catmint (*N. cataria*); the Hungarian catmint (*N. pannonica*); the naked or Spanish catmint (*N. nuda*); the Italian catmint (*N. italica*); and the tuberous-rooted catmint (*N. tuberosa*).

*Method of Culture*.—These plants are all capable of being increased by seeds, parting the roots, slips, and cuttings, but the first is the principal mode.

And the seeds may be sown in the autumn or spring, on a bed of light earth, raking it in lightly: when the plants have attained some growth, they may be planted out in nursery rows, to remain till the autumn, when they may be set out where they are to remain; or they may remain where sown, only thinning them properly out.

The partings of the roots may be set out separately, where they are to remain, in the beginning of the autumn or spring, being afterwards kept free from weeds.

And the slips or cuttings of the branches may be planted out in the spring in shady situations, occasional supplies of water being given till they have stricken root perfectly.

It may be stated that the first sort and varieties, as well as many of the others, may afford variety in the borders, clumps, and other parts of pleasure-grounds, in mixture with herbaceous plants of different descriptions. They are likewise some of them cultivated for medicinal use occasionally.

NEPHALIA, among the Greeks, a festival called the feast of sober men, at which the Athenians offered to the sun and moon, to Aurora and Venus, a drink made of water and honey. They burnt all sorts of wood on the occasion, except the vine and fig-tree.

NEPHELIUM, in Botany, from νεφέλιον, a little cloud, speck, or spot, but of the reason of its application to the plant in question we can offer nothing more than conjecture. One of the specimens from Thunberg in the Linnæan herbarium is remarkable for a most curious Lichen, or Endocarpon, with which its leaves are spotted; but this is not an original specimen. Whether that from which Linnæus took his description was so marked, we have no means of determining, as the plant does not exist in his old original collection. Such however might be the case, as he certainly described the genus from nature, perhaps in the herbarium of some friend, who had no duplicate to spare. Linn. Mant. 18. Schreb. 634. 837. Willd. Sp. Pl. v. 4. 372. Mart. Mill. Dict. v. 3. Juss. 191. Lamarck Illustr. t. 764. Poir. in Lam. Dict. v. 4. 460. Gærtn. t. 140.—Class and order, *Monocia Pentandria*. Nat. Ord. *Tricocceæ*, Linn. *Corymbifera*, Juss. *Amentaceæ*, Gærtn. Rather perhaps akin to the *Sapindi*, or to the *Terebintaceæ* of Jussieu; it certainly can have nothing to do with his *Corymbifera*.

Gen. Ch. Male, Cal. Perianth of one leaf, bell-shaped, with five teeth. Cor. none. Stam. Filaments five, awl-shaped, longer than the calyx; anthers obtuse, deeply cloven at their base.

Female,



Female, in the same cluster, *Cal.* Perianth of one leaf, bell-shaped, with four teeth, the two opposite ones most remote; withering, permanent. *Cor.* none. *Pist.* Germens two, superior, roundish, mucicated, larger than the calyx; styles two, thread-shaped, recurved, originating from between the germens; stigmas thickish, obtuse. *Peric.* Drupas two, ovate, clothed with awl-shaped bristles, each of one cell, with a cartilaginous coat, containing a watery pulp. *Seed.* Nut solitary, roundish.

*Eff. Ch.* Male, Calyx with five teeth. Corolla none. Female, Calyx unequally four-cleft, inferior. Corolla none. Germens two. Styles two, from their base. Drupas two, mucicated, single-seeded.

1. *N. lappaceum.* Rambutam. Linn. Mant. 125. — Native of the East Indies. A shrub or tree, with round smooth branches. Leaves alternate, stalked, abruptly pinnate, about a span long, smooth, coriaceous, of two or three pair of elliptical leaflets, on short partial stalks; their upper side polished; the under paler and opaque; with one rib, sending off numerous oblique veins, connected by a multitude of reticulations. *Stipulas* none. *Clusters* axillary and terminal, about the ends of the branches; their stalks, as well as the calyx, rusty. *Bractees* minute. *Fruit* about an inch in length, covered with innumerable projecting, curved, coloured, polished bristles. A considerable affinity may be traced between this fruit and the Chinese Lit-chi; see *EUPHONIA* and *SCYTALIA*. We can find no figure of the plant except Lamarck's, cited above. The habit of the leaves, the inflorescence, pubescence, form of the calyx, all are evidently akin to *Scytalia Longan*; a specimen of which, brought by Lord Valentia from the botanic garden at Calcutta, is infested with the same *Lichen* as we have mentioned above, and which we have scarcely met with elsewhere. S.

NEPHEW, a term relative to uncle and aunt; signifying a brother's or sister's son, who, according to the civil law, is in the third degree of consanguinity; but, according to the canon law, in the second. See *CONSANGUINITY*.

The word is formed from the Latin *nepos*; which in the corrupt ages of that language signified the same: though anciently and properly it denoted a grandson.

NEPHILIM, in *Mythological History*, a name given both to giants and to persons of dissolute manners. In the book of Genesis (chap. vi.) we read that the sons of God, that is, the successors of Seth, had intercourse with the daughters of men, i. e. with those who descended from Cain, and from this intercourse proceeded the Nephilim, who fell into the grossest enormities, as their name imports. The Centaurs were also called Nephilim.

NEPHIN, in *Geography*, a mountain of the county of Mayo, Ireland, which is 2640 feet high. It stands almost insulated, and appears rounded at all sides, and at top like a huge rath or barrow. Mr. Arrowsmith, in his Map of Ireland, has given the name of Nephin Bog mountains to a range extending N.W., and lying to the westward of Nephin, and also the name of Green Nephin Mount to a hill south of lough Conn. This lake, which is nine miles long, is at the foot of mount Nephin, which rises from its western shore.

NEPHRALGIA, in *Medicine*, from νεφροί, the kidneys, and άλγος, pain, signifies every painful affection of the kidneys, except that which is connected with inflammation of these glands, the presence of which is indicated by a symptomatic fever, and constitutes the NEPHRITIS of the nosologists; which see below. The absence of fever, therefore, distinguishes the nephralgia from nephritis.

The painful affections of the kidneys, which are not inflammatory, have been improperly termed *nephritic colic*;

for, in strict propriety, the word *colic* is applicable only to the painful condition of the colon, or large intestine.

The causes of pain in the kidneys, independently of inflammation in the substance of these organs, or in the membranes that surround them, are not very numerous. Sauvages, indeed, has enumerated sixteen species of nephralgia (see his Nosol. Methodica, Class. vii. Genus xxv.); but if we examine accurately the grounds of these specific distinctions, we find that he has included several painful affections of the loins, in which the kidneys are not concerned; and which, therefore, are not instances of nephralgia. Thus, his fourth species, nephralgia *rheumatica*, is in fact lumbago, or rheumatism of the muscles and ligaments connected with the spine. His eighth, ninth, and tenth species, nephralgia *a pancreate*, *N. verminosa*, and *N. mesenterica*, are obviously painful disorders of other organs in the vicinity of the kidneys; as well as his last, *N. gravidarum*, originating from the distention of the gravid uterus. He defends this arrangement upon the principle, that the generic appellation does not necessarily denote the actual seat of the symptoms, but the part to which the patient's sensations refer them; but this is an incorrect view of the subject; as it tends to mislead the practitioner in the choice and application of his remedies, by confounding together those things which it is the principal office of the physician to separate and to distinguish; namely, the diseases which have some symptoms in common, and are referred to the same situation, but which actually belong to different organs, and therefore require different modes of treatment.

The most frequent cause of nephralgia, or pain in the kidneys, is the presence of small stones or concretions in the pelvis of the kidney, or in the ureters leading to the bladder, or of the sandy or gravelly matter irritating the same parts. The nature of these substances, the symptoms by which their presence is indicated, the diagnosis between them, and the symptoms of other painful disorders affecting the loins, and the proper remedies to be administered for their cure, have been stated at sufficient length under the head of GRAVEL, in *Medicine*. These forms of the disease are included in the first and second species of Sauvages, viz. the nephralgia *calculosa*, and *N. arenosa*; and the gouty nephralgia, of the same author (spec. 3.) should probably be referred to the same cause, since that disease sometimes alternates with gravel, and the gravel is composed of the same matter with the external concretions, or chalk-stones, of gout.

Among the various acute spasmodic pains, which occur in the hysterical attacks of nervous women, a severe nephralgia is liable to come on suddenly, and suddenly disappear, like other symptoms of hysteria. The severe pain in the loins, which shoots along the course of the ureters, and is accompanied with violent vomiting, often mimics the symptoms of calculus in the kidneys, and is only to be distinguished by an experienced practitioner, who examines the state of the pulse, and the presence of the other symptoms of hysteria; especially the *globus hystericus*, and the sudden transitions of mental emotion from one extreme to another. (See HYSTERIA.) This species of nephralgia, like other hysterical pains, is speedily relieved by opiates and antispasmodics.

The nephralgic pains, or rather the pains which are apparently seated in the kidneys, when the mesentery, pancreas, gravid uterus, and other contiguous viscera are diseased, being secondary or symptomatic, can only be relieved by those means which alleviate the primary disease.

NEPHRITIC, NEPHRITICUS, νεφριτικός, formed of νεφρος, rein, kidney, something that relates to the kidneys. See KIDNEY.



NEPHRITIC Colic. See NEPHRALGIA.

NEPHRITIC Stone, *Lapis Nephriticus*, in *Natural History*, a sort of precious stone; so-called from its extraordinary virtues against the stone and gravel in the kidneys.

It is a species of jasper, commonly of an uniform dusky green colour; but sometimes variegated with white, black, or yellow. It seems only to differ from jasper in its being harder, and always without any thing of red.

It is brought chiefly from New Spain, where it is sometimes found in pieces large enough to make moderate cups. There is some, likewise, found in Old Spain, and Bohemia.

This stone was once very dear, by reason of the wonderful virtues ascribed to it. A cup made of it was sold for 1600 crowns, in the time of the emperor Rudolphus II. The best for medicinal use is of a greyish-green, fat and unctuous, like talc of Venice.

The Indians of New Spain, who first discovered its use, and taught it the Europeans, wear it hung about their necks, after having cut it in various figures, chiefly of the beaks of birds: whence some charletans take occasion to counterfeit it, by cutting other green stones into like figures; and sell them at great prices, to those who have an opinion of their nephritic faculty.

NEPHRITIC Wood, *Lignum Nephriticum*, a kind of medicinal wood growing in New Spain, chiefly in the kingdom of Mexico; called by the Indians *coult* and *tlapalcypally*, as being reputed sovereign against nephritic pains.

Dr. Lewis says, he has never known its being given medicinally, and that it is not received in practice.

It must be chosen well cleared of its bark and rind; it is of a bitter taste, and a dusky yellow colour; but when infused with cold water, gives it a sky-blue tincture, when viewed by a false light, and a gold colour by a true one: a little of any acid being mixed with the tincture, both these colours disappear; but a little oil of tartar restores its sky-blue.

Some substitute ebony, and others red Brazil wood, for *lignum nephriticum*; but the deceit becomes apparent by infusing it in water. See TRANSMUTATION of Colours.

NEPHRITICS, NEPHRITICA, in the *Materia Medica*, medicines proper for the relief of the diseases of the kidneys, and especially, therefore, of the stone and gravel. See GRAVEL.

In addition to the alkaline and absorbent medicines, mentioned in the article just referred to, and which operate chiefly by preventing the formation of the uric or lithic acid, several drugs, possessed of a mucilaginous, anodyne, or diuretic quality, have been recommended as conducive to the relief of nephritic complaints. (See LITHONTRIPTIC.) The *uva urfi* has obtained considerable reputation for its virtues in this way; but it is very questionable, whether it possesses any other powers than the mallow, asparagus, fago, and other mucilaginous substances, and whether any of these are beneficial, except from the quantity of diluent fluid taken with them. The spirit of nitrous æther, turpentine, &c. when they act as diuretics, and therefore augment the dilution of the urine, occasionally produce relief. And opiates, camphor, and other soothing medicines, afford a temporary alleviation, by lessening the sensibility of the nervous system, and thus diminishing the degree of actual pain.

NEPHRITIS, in *Medicine*, from νεφρος, the kidney, with the termination *itis*, signifies inflammation of the kidneys.

The local symptoms, which denote the presence of inflammation in the kidneys, do not differ very materially from those which belong to *nephralgia*, and which are principally

the result of the irritation of calculus, or sandy concretions, formed in the urinary passages. (See GRAVEL.) For, in fact, inflammation of the kidneys is not very common as an idiopathic disorder, originating from the ordinary causes of inflammatory affections; but is usually an effect of the irritation of calculi in the same passages, when long continued, or particularly severe in degree: in other words, nephralgia is liable to terminate in nephritis.

The principal circumstance which marks the occurrence of inflammation in the kidneys, is the addition of symptomatic fever to the nephralgic signs. The pulse becomes frequent and sharp in its beats; the skin grows hot; the tongue is dry, and loaded with a clammy fur; and there is considerable thirst, loss of appetite, languor, and depression of strength. Pain is felt in the region of the kidney, which is sometimes acute and pungent, but sometimes obtuse, and is most frequently confined to one of these glands. This pain is ascertained to be seated in the kidney, (and not in the muscles of the loins, in the bowels, or the liver,) by its shooting along the course of the ureter towards the bladder, and by the accompaniment of a stupor or numbness in the thigh of the side affected, and of a retraction of the testicle of the same side in men, as well as of a sympathetic derangement of the stomach, which is troubled with sickness and frequent vomiting. There are also occasionally colic pains in the bowels, and often costiveness, accompanying nephritis. The urine is voided frequently, and in small quantity at each time, and it is sometimes of a pale, but most commonly of a deep red colour. When pus is formed, by the progress of the inflammation, it may be known by its appearance in the urine, which will be more distinctly marked, in proportion to the quantity of the pus, or by the symptoms to be mentioned immediately.

The right distinction of this disease from the lumbago, from the mere spasmodic nephralgia arising from the passage of a calculus along the ureter, and from inflammation of other viscera contiguous to the kidneys, is of more importance in nephritis, than in the more chronic nephritic complaints; because the treatment required for its cure must be materially different. Thus, with respect to the spasmodic pain accompanying the irritation of a calculus, impacted in the ureter, a large dose of opium will sometimes at once relax the spasm, and allow the concretion to pass into the bladder, producing instantaneous relief; but if actual nephritis were present, the opium would confer no benefit; on the contrary, it would tend to augment the inflammation, and to carry it on to suppuration. From lumbago, then, the nephritis may be distinguished by the presence of acute fever; by the pain being little increased by moving the muscles of the back, but considerably aggravated by shaking or jolting motion, especially when a calculus is present; and by the concomitant sickness. From spasm, excited by calculous irritation, it is distinguished by the presence of fever: and from colic, and inflammation of the intestines, which are sometimes accompanied, more particularly the last, by sickness and vomiting, and the last always by fever, it is distinguished by the numbness of the thigh, and the pain and retraction of the testicle in male patients.

In addition to the ordinary exciting cause of nephritis above mentioned, some other circumstances occasionally give rise to it. Among these are mechanical injuries to the kidneys; as blows in the lumbar region; strains from violent muscular exertion, in raising weights, &c.; and violent exercise in travelling, especially on horseback; even travelling in a carriage has induced it, and occasioned a discharge of bloody urine, where a calculus was already formed in the kidney. The influence of cold combined with moisture, especially



cially when applied to the loins and belly, has likewise excited nephritis as well as other acute inflammations. And certain stimulating substances, which have been swallowed, and exert a specific action on the urinary passages, such as cantharides, turpentine, and other acrid diuretics, have been said also to produce this inflammation. In some it has occurred, in the way of metastasis, on the retrocession of gouty inflammation from the extremities.

A predisposition to nephritis is obviously attached to peculiar constitutions, especially to those which have a gouty tendency, or a disposition to calculous complaints; and these two maladies are so far connected, that they sometimes alternate with each other, and some individuals of a gouty parentage have been observed to be affected with gout, while others have suffered from calculous complaints. Corpulency seems also to predispose to these affections of the kidneys; or the predisposition may be produced, in cases of this nature, from the constant stimulus given to the urinary passages by the use of much high-seasoned food and fermented liquors.

The treatment of nephritis, like that of other acute inflammatory diseases, is simple and obvious, when the existence of the complaint has been clearly ascertained by the presence of the symptoms above described. Where the pain and febrile symptoms are violent, general bloodletting must be employed in proportion to the age and strength of the patient. In habits that are less robust, and in cases of minor severity, the free local detraction of blood from the lumbar region by means of *leeches*, or *cupping* must be substituted; or it may be resorted to after the general bleeding, where the circumstances of the patient render the repetition of the former less advisable. At the same time, a *blister* may be applied to the loins, and removed as soon as it has produced any degree of vesication, lest the absorption of the cantharides may occasion an irritation in the urinary passages. Dr. Cullen, Dr. Gregory, and other able physicians, however, have maintained, that such an irritation, which rather affects the neck of the bladder than the kidneys, is not much to be apprehended, while the effects are as beneficial as in other local inflammations. Mild *cathartics*, which shall empty the bowels, without irritating them and the contiguous organs, are likewise necessary; and their operation may be aided by the injection of warm emollient *glysters*, which will likewise afford a fomentation to the diseased parts, and thus contribute to the alleviation of the pain, as well as to the resolution of the inflammation. Saline medicines, whether used as cathartics, diuretics, or refrigerants, are on the whole to be deprecated, inasmuch as they are liable to irritate the urinary passages. The only diuretics that are admissible, are mucilaginous *diluent drinks*, which should be copiously administered, for the purpose of diminishing the acrimony of the urine, by diluting the salts which it contains; to say nothing of the lubrication of the passages by the mucilages, which is a questionable hypothesis. At the same time, the antiphlogistic regimen, as it is called, should be rigidly enforced; *i. e.* all animal food, condiments, and heating liquors should be proscribed, and milk, whey, herb-tea, gruel, and vegetable and farinaceous matters be exclusively used.

With respect to the exhibition of *opiates* in nephritic inflammation, although during the early and active stage it is not to be trusted to; yet when the violence of the disease has been mitigated by these antiphlogistic measures, they may be employed with great advantage to relieve irritation. *Fomentations* and the *warm bath* may be also employed, under the same circumstances, with great benefit.

Under the plan of treatment above recommended, if it be actively pursued within the first week of the disease, the

nephritic inflammation will admit of a cure by resolution; and this event is sometimes accompanied by a copious discharge of urine, a diarrhoea, or hæmorrhoidal bleeding. If, however, the inflammation continues unsubsided for twelve or fourteen days, suppuration is to be apprehended; the pain begins to remit, and is accompanied with a sense of throbbing; daily paroxysms of rigour and hectic fever, followed by perspiration in the night, occur; emaciation ensues; in a word, a sort of renal consumption, as Hippocrates calls it, comes on, and may terminate the life of the patient. In some cases, the whole substance of the diseased kidney has been reduced to a bag of pus, while the other kidney, being under the necessity of carrying off a larger proportion of the excrementitious fluids, has become considerably enlarged. In these cases of renal suppuration, the same light demulcent diet, which is required in other varieties of *hectic*, is the principal remedy to be relied on, as it affords the best means of supporting the constitution through the suppurative process, while it does not aggravate the febrile symptoms; we mean a milk and vegetable diet, especially of goat's milk, and the farinaceous vegetable substances. The most favourable termination of suppuration in the kidney is, when the abscess opens into the proper urinary passages, and is discharged through the bladder; or when, in consequence of previous adhesion of the parts, it opens into the large intestine, and passes off by stool, as was observed by the ancients. See Hippocrat. Lib. de Intern. Affection; Aëtius, *sem.* xi. cap. 18.

Sometimes, though very rarely, nephritic inflammation is said to have terminated in gangrene, and sometimes in scirrhus; but this last affection, by which the kidney is sometimes enlarged to an enormous bulk, is perhaps more commonly the result of a chronic, than of an acute inflammation of the kidneys, and is scarcely within the influence of medicine. See Van Swieten, *Comment. ad Aph.* 993—1006. Cullen, *First Lines*, vol. i. chap. 11. Baillie's *Morbid Anatomy*.

NEPHRODIUM, in *Botany*, from  $\nu\epsilon\phi\rho\sigma$ , a kidney, in allusion to the shape of the involucre, or scale that covers the fructification; a genus of Ferns, first separated by the French botanists, from the *Aspidium* of Swartz, and of Sm. Fl. Brit. 1118, on account of the kidney-shaped involucre. Michaux Boreal-Amer. v. 2. 266. Brown. Prod. Nov. Holl. v. 1. 148.—Class and order, *Cryptogamia Filices*. Nat. Ord. *Filices*.

The writer of the present article has long ago indicated this character in some of the old genus *Polypodium* as it stood in Linnæus; see *Mem. de l'Acad. de Turin*, v. 5. 409, and *Tracts relating to Nat. Hist.* 233. The part in question is nearly kidney-shaped in the *Polypodium Filix mas*, or *Aspidium Filix mas*, Engl. Bot. t. 1458, as well as in the North American *Polypodium*, or *Aspidium marginale*. In these however it most nearly approaches the orbicular form, which the authors who have founded *Nephrodium* wish to consider as the mark of *Aspidium*. It is needless to say the true genus *Polypodium* is now, by universal consent, agreed to have no involucre at all. On the other hand, the involucre in *Aspidium Filix femina*, Engl. Bot. t. 1459, and several others, verges towards a crescent, whose curve, in certain cases, is very slight, at some periods of its growth. These therefore approach *Asplenium* and *Darea*. (See *FILICES*.) They are nevertheless distinguished from the two genera last mentioned, by the insertion of the involucre being at a limited point, or short sinus, in one of its sides. If the insertion of this part in any *Aspidium* were really central, or peltate, we might admit *Nephrodium*; but we believe such a character does not exist in any, there being always a lateral sinus, however short or concealed by the expanding membrane;



membrane; infomuch that a regular series of species may be traced, from the most orbicular *Aspidium*, to the confines of *Darea* and *Asplenium*. S.

NEPHROMETRÆ, a name given by some authors to the muscles of the loins, called by the generality of medical authors *psoa*.

NEPHROTOMY, derived from νεφρος, a kidney, and τεμνω, to cut, denotes, in *Surgery*, the operation of extracting a stone from the kidney.

There have been surgeons who entertained the opinion that nephrotomy admits of being practised in two different cases; viz. 1. When the kidneys are entire, and no external sign indicates that these organs contain a stone. 2. When an abscess, or fistulous aperture, occurs in the loins. But, says Sabatier, it is easy to prove, that it is only in the second case that the operation is practicable.

The following reasons have been advanced for the purpose of proving that nephrotomy is practicable in the case first specified: 1. The operation has been recommended by Hippocrates: 2. It has been repeatedly performed: 3. Analogy is favourable to the practice. How little validity these reasons possess will next be considered.

1. Hippocrates says; "cum autem intumuerit et elevatus fuerit, sub id tempus juxta renem secato, et extracto pure, arenam per urinam cientia sanato. Si enim sectus fuerit, fugæ spes est; si minus, morbus homini comminatur, &c." "If the part should swell and become elevated, an incision must be made near the kidney in order to let out the matter, and the gravel is then to be got rid of by means of diuretics; for such an incision may save the patient's life, which otherwise would certainly be lost." Sabatier with reason contends, that it cannot be inferred from this passage that Hippocrates has recommended the performance of nephrotomy, when the kidneys are entire. On the contrary, he appears to have advised the operation only when these viscera are in a state of abscess, and the matter tends to the surface of the body. There cannot be a doubt that Celsus and Galen have given this interpretation to the above passage in Hippocrates, inasmuch as neither of them makes any mention of extracting calculi which are included in the kidneys. Their silence upon this point has been imitated by the Greek and Latin writers, and it is in the Arabian authors that the first evidence in favour of such a proceeding is to be traced.

There are not many instances of nephrotomy being done when the kidney was supposed to be entire, nor are these well authenticated. The most ancient is scarcely known except by tradition. It is related in the *Abrégé Chronologique de l'Histoire de France*, par Mézerai. The doctors, (says this historian,) having learned that an archer of Bagnolet, who had been for a long while afflicted with the stone, was condemned to death for his crimes, requested the magistrates to give him into their hands, in order that the experiment might be made, whether it were practicable to open the kidneys, and extract a calculus, without fatal consequences. This operation proved entirely successful, and the man lived several years afterwards, in excellent health.

This account seems, indeed, to shew, that an incision was actually made into the kidney. But, says Sabatier, if we refer to Ambrose Paré, who mentions the same case, it will not appear that such a proceeding was adopted. The following is the passage in the latter writer: "Je ne puis encore passer que je ne recite cette histoire Archer de Meudon, près Paris, qui étoit prisonnier au châtelet pour plusieurs larcins, à raison desquels il fut condamné à mort. Au même jour, fut remontré par les médecins de la ville, que plusieurs étoient fort travaillés et molestés de pierres, coliques,

passion, et maladies des côtés, dont étoit fort molesté ledit Franc Archer, et aussi desdites maladies étoit fort molesté monseigneur du Bouchage, et qu'il seroit fort requis de voir, les lieux où leddites maladies sont concrées dans le corps humain, laquelle chose ne pouvoit être micux vue qu'en incisant le corps d'un homme vivant, ce qui pourroit être bien fait en la personne d'icelui Franc Archer; et dedans icelui fut perquis et regardé le lieu desdites maladies, et après qu'il eut été vu, fut reconçu, les entrailles mises dedans, et par ordonnance fut bien pansé; tellement que dedans quinze jours il fut bien, guéri, et cut sa rémission, lui fut donné avec ce argent."

This last statement proves how difficult it is to form a judgment respecting the disease under which the above archer laboured. Opinions upon the subject are considerably divided. Collot believes that nephrotomy was really performed upon the man. On the contrary, Méri thinks that the archer had a stone in the bladder, and was cut in a manner analogous to the apparatus major. Haller entertained the same opinion as Méri, in regard to the seat of the disease, but suspects that the operation performed must have been the apparatus altus, because, after the stone had been extracted, the bowels were replaced, and the abdomen sewed up. Lastly, Tolet believes that the archer was afflicted with a volvulus, and that an opening was made in the abdomen, in order to disentangle the intestines. Besides these different sentiments, it is proper to remark that historians do not concur respecting several other essential particulars of the event under consideration. Some represent it as having occurred in the time of Charles VII.; others in the reign of Lewis XI. Some describe the patient as an inhabitant of Meudon; others of Bagnolet. Some assert that he lived afterwards a long while in good health; others that he survived only a short time, &c.

The second example of the operation of nephrotomy deserving notice, is that recorded in the *Philosophical Transactions* for 1696. It is there stated, that Mr. Hobson, the English consul at Venice, having been a long while afflicted with pain in the kidneys, in consequence of a calculus being lodged in one of those organs, went to Padua, for the purpose of consulting Marchettis, a very experienced physician, who told him that he knew of no other mode of relieving him, except that of making an incision, through which the extraneous substance that annoyed him might be extracted. There was no external sign by which the presence of the stone could be ascertained, and Marchettis did not conceal from the patient the difficulty and danger of the operation. Mr. Hobson, however, shewed so much resolution, and so strong a desire to submit to any means of cure, that Marchettis could not decline the attempt. The parts were divided with a straight bistoury. The hemorrhage was so profuse, that the extraction of the stone was unavoidably deferred to the next day. In short, two or three calculi were then taken out, and the wound dressed. The subsequent symptoms were not serious, and Mr. Hobson was soon well enough to return to Venice, although his wound was not completely healed, as a small fistula still continued, from which pus and urine were discharged. Some time afterwards, another stone presented itself, and was easily taken out. The patient at length experienced a radical cure. Ten years had elapsed, when Mr. Hobson related his case to Dr. Bernard, who afterwards communicated it to the Royal Society.

That the operation was actually done, was proved by the cicatrix, which was visible in the loins; but the circumstances of the case could not be accurately known. Who, says Sabatier, can pretend to decide whether Marchettis was induced



induced to operate by the presence of a deeply-seated abscess, of which Hobson himself might be ignorant? This conjecture is rendered probable by the circumstance of this operation not having been mentioned by any body, though doubtless it must have been done before witnesses, and Peter de Marchettis, who survived his son that died in 1673, takes no notice of it in his "Sylloge Observationum Medico-Chirurgicarum Rariarum."

According to Sabatier, there are some other instances recorded of nephrotomy being performed while the kidneys were entire; but the details are such as can claim no kind of confidence.

3. Analogy, says Sabatier, is not in favour of this operation. Considerable abscesses, indeed, are observed to form in the kidneys, and burst externally, and wounds to extend to these viscera, without dangerous symptoms being produced. But the nerves and blood-vessels are not injured in cases of abscess, and, by great good fortune, a sword may pass through the texture of important viscera, without the injury being followed by dangerous consequences; but, in a deep incision made with a bistoury, every thing that presents itself to the edge of the instrument is divided.

The little validity of the reasons alleged in favour of nephrotomy, in the case in question, is not the only motive which should incline us to reject this operation. There are other considerations, deduced both from the want of symptoms by which the presence of a stone is indicated, and from the difficulty of getting at the kidneys, in consequence of their position, and the great number of parts which cover them. This difficulty is such, that James Douglas, a surgeon at Edinburgh, having attempted the operation upon the dead body of a calculous patient, aged fifty years, could not succeed, and was obliged to open the abdomen, in order to get at the kidneys, from which he extracted two stones; one of a triangular shape, weighing half an ounce; the other of an irregular square form, weighing not more than sixteen grains.

Besides, as Sabatier remarks, stones may form in different parts of the kidney. Frequently they are wedged in its substance, from which it would be impossible to extract them, without producing a dangerous degree of laceration. On the contrary, they often lie in the pelvis of the kidney; and occasionally, the upper part of the ureter is filled with particles of gravel, which cannot be readily taken out. Lastly, either only one kidney is affected, or both are. In the first case, the patient may live a long time; in the second, it would be useless to operate only on one of these viscera. But though nephrotomy is impracticable if the kidneys are entire, it may be undertaken when the stone has produced an abscess in the loins; or when, in consequence of such an abscess, a fistula remains, within which the calculus can be felt with a probe. In these circumstances, the operation should be done; every body concurs upon this point: that is to say, all surgeons agree in regard to the propriety of opening the abscess, and of introducing the finger, and endeavouring to feel the stone, or of dilating the fistula, in order to get at the foreign body, and extract it. See Sabatier's *Médecine Opératoire*, tom. ii.

NEPI, in *Geography*, a town of Italy, in the Patrimonio, the see of a bishop, united to Sutri, containing six churches and five convents; 20 miles N. of Rome. N. lat.  $42^{\circ} 15'$ . E. long.  $12^{\circ} 24'$ .

NEPISET, a town of East Greenland. N. lat.  $60^{\circ} 35'$ . W. long.  $45^{\circ}$ .

NEPISINGES, or NIPISINGIS, a lake of Upper Canada, 15 miles broad, and 36 leagues long, encompassed with rocks. Its shore is inhabited by the remains of a

Christian tribe, called "Nepisinguis," of the Algonquin nation. This lake discharges itself by the Riviere des François.

NEPISS, a lake of Canada, on the borders of Maine. N. lat.  $45^{\circ} 40'$ . W. long.  $70^{\circ} 31'$ .

NEPOMUK, a town of Bohemia, in the circle of Pilsen; 9 miles E.N.E. of Klattau.

NEPONSAT, a river of America, in the Massachusetts, originating chiefly from Muddy and Punkapog ponds in Stoughton, and Mashapog pond in Sharon, and after uniting with several streams, meeting the tide in Milton, whence it is navigable for vessels of 150 tons burden to Boston bay, at the distance of four miles. There are six paper-mills and others of different kinds on this small river.

NEPOS, CORNELIUS, in *Biography*, a Roman historian and biographer, who flourished in the time of Julius Cæsar and Augustus. He was born on the banks of the Po, probably at Hostilia, and like some other of his learned contemporaries, he shared the favours, and enjoyed the patronage of the emperor. He was the intimate friend of Cicero and Atticus. We have no other account of his life. As an author, he is known to every school boy by his "*De Vitis Excellentium Imperatorum*," which is his only work that has reached modern times. It consists of twenty-two articles of biography concerning Greek and other foreign generals, with a fragment of the life of Cato of Utica, and a more detailed memoir of Atticus. This work long passed under the name of *Emilius Probus*, who presented it to the emperor Theodosius in the fourth century, but the purity of the style, which is that of the best age of the Latin language, assigns them to their real author. According to some writers, he composed three books of "*Chronicles*," also a biographical account of all the most celebrated kings, generals, and authors of antiquity. The editions of Cornelius Nepos have been extremely numerous; the most valuable are the *Variorum*, of which that of 1675 is said to be the most correct. Lempriere speaks in high terms of that of Verheyk, 8vo. Lug. Bat. 1773, and that of Glasgow, 12mo. 1761.

NEPOS, FLAVIUS JULIUS, emperor of the West, was a native of Dalmatia, and having married a niece of Leo I. he, through the interest of the empress Verina, who was studious to promote the greatness of her own family, succeeded his uncle Marcellinus in the sovereignty of Dalmatia, a more solid possession, says Gibbon, than the title which he was persuaded to accept of "Emperor of the West." In the empire he succeeded Olybrius, who had been placed on the throne at the time in which Anthemius was massacred. Owing to the languid and irresolute measures of the court, it was some months before Nepos could shew himself, with a respectable force, to his Italian subjects. During that interval, Glycerius, an obscure soldier, was invested with the purple by Gundobald, a Burgundian prince, who, however, was unable, or unwilling, to support his nomination by a civil war: the pursuits of domestic ambition recalled him beyond the Alps, and his client was permitted to exchange the Roman sceptre for the bishopric of Salena. After extinguishing such a competitor, the emperor Nepos was acknowledged by the senate, by the Italians, and by the provincials of Gaul. His moral virtues and military talents were loudly celebrated, and those who derived, or who expected to derive any private benefit from his government, announced in prophetic strains the restoration of public felicity. Their expectations were confounded in the space of a single year, and the treaty of peace, which ceded Auvergne to the Visigoths, is the only event of his short, and inglorious reign. The most faithful subjects



subjects of Gaul were sacrificed by the Italian emperor to the hope of domestic security, but his repose was soon invaded by a furious sedition of the barbarian confederates, who, under the command of Orestes, their general, were in full march from Rome to Ravenna. Nepos trembled at their approach, and retired to his Dalmatian principality, on the opposite coast of the Adriatic. By this abdication, he protracted his life about five years, in a state between an emperor and an exile, till he was assassinated at Sartoria by Glycerius, who was translated, perhaps as a reward of his crime, to the archbishopric of Milan. This was in the year 480. Gibbon, vol. vi.

**NEPOTISM**, a term used in Italy, in speaking of the authority which the pope's nephews and relations have in the administration of affairs; and of the care the popes take to raise and enrich them.

Many of the popes have endeavoured to reform the abuses of nepotism: for some time past, nepotism is said to have been abolished. Leti has wrote expressly on this subject, *Il Nepotismo*.

**NEPOTSKOI**, in *Geography*, a town of Russia, in the government of Archangel, on the coast of the White sea; 24 miles W. of Archangel.

**NEPHTHALITES**, a name formed by corruption from Ephthalites, and derived from the Oxus or Amu; by the Persians styled Abtelah, or the river of Gold. This was a denomination given to the people of Great Bucharra by the Byzantine historians; who called them White Huns, as all the western Barbarians were denominated Scythians, or Huns.

**NEPTUNALIA**, feasts held among the ancients, in honour of Neptune.

The *Neptunalia* differed from the *Consualia*, in that the latter were feasts of Neptune, considered particularly as presiding over horses, and the manege. Whereas the *Neptunalia* were feasts of Neptune in general, and not considered under any particular quality. They were celebrated on the 10th of the calends of August.

**NEPTUNE**, in *Mythology*, the son of Saturn and Rhea, and brother of Jupiter and Pluto. He is commonly represented standing with his trident in his right hand, which was his peculiar sceptre, as lord of the Mediterranean seas, and seems to have been used by him chiefly to rouse up the waters; for we find sometimes that he lays it aside, when he is to appease them; but he resumes it, when there is any occasion for violence. Virgil, *Æn.* ii. v. 162, makes him shake Troy from its foundations with it; and in Ovid, *Met.* i. v. 284, it is with the stroke of this that the waters are let loose for the general deluge. The dolphin is in his left hand, and he treads on the beak of a ship, to shew that he presided over the seas, or, more particularly, over the Mediterranean sea; which was the great, and almost the only scene for navigation, among the old Greeks and Romans. The poets have described this god as passing over the calm surface of the waters, in his chariot drawn by sea-horses. The fine original description of this is in Homer; from whom Virgil, *Æn.* i. v. 155, and Statius *Achil.* i. v. 60, have copied it. A triton is sometimes represented on each side, as guiding those that draw the chariot of Neptune. His aspect in all the best figures of him is majestic and serene. The lower sort of artists exhibit him sometimes with an angry and disturbed air; and one may observe the same difference in this particular, between the great and inferior poets, as there is between the good and bad artists. Thus Ovid, *Met.* ii. v. 271, describes Neptune with a sullen look; whereas Virgil, *Æn.* i. v. 127, expressly tells us that he has a mild face, even when he is representing him in a passion. Neptune had a great number

of temples erected to his honour, as well as feasts and games established in token of respect, both in Greece and Italy. Spence's *Polymetis*, p. 65. p. 215, &c.

**NEPTUNE's Cap**, a name given by naturalists to a remarkable species of marine fungus, which is never found affixed to any solid body, but always loose. and rolling about at the bottom of the sea. Its usual size is about five inches in height, and six or seven in diameter at the base. It gradually becomes narrower from the base to the summit, where it terminates in a round end, ornamented with clusters of a foliaceous sort of substances, resembling a cock's comb, but of the same matter with the rest of the substance.

Its internal surface is very different from this: it is lightly furrowed down the sides, and beset with a number of small protuberances, with obtuse points. Some of these, when small, are found with a pedicle growing to them. This is always of a very brittle substance, and it is probable that all those found loose had originally such pedicles, by which they adhered to some solid body, in the manner of the corals, and other marine subitances; but that its extreme brittleness occasions it to be soon broken off by the motion of the water, after which it rolls loose about, and takes in its nourishment at its several pores, by means of the water, which every way surrounds it. It is not probable that these and the like marine substances are nourished only by sea-water; but that there is in the sea a sort of mud continually formed out of the decayed particles of animals, and the softer vegetables, which may be supposed much to resemble the common vegetable mould in its uses, as it has much the same origin; and this, or at least its finer and lighter parts, may be conveyed by water into the pores of these the supposed plants, and nourish them. Mem. Acad. Par. 1700.

**NEPTUNINS**, in *Mythology*, were sea-nymphs, so called, because they were the descendants of Neptune.

**NEQUITAO**, in *Geography*, a town of South America, in the province of Venezuela; 20 miles S. of Truxillo.

**NEQUONQUIQUA**, a river of New Brunswick, which runs into the St. John. N. lat. 46° 6'. W. long. 66° 55'.

**NER**, a town of Hindoostan, in the circar of Aurungabad; 38 miles E. of Aurungabad.

**NERA**, or **NEIRA**, one of the Banda islands. See **BANDA**.

**NERAC**, a town of France, and principal place of a district, in the department of the Lot and Garonne, situated on the Blaise, which here becomes navigable; 12 miles S.W. of Agen. The place contains 5587, and the canton 11,876 inhabitants, on a territory of 185 kilometres, in 13 communes. N. lat. 44° 8'. E. long. 0° 25'.

**NERAINSKOI Serebrenoi Zavoid**, a town of Russia, in the government of Irkutsk, on the Argun, near the borders of China; 118 miles E.S.E. of Nertchinsk. N. lat. 50° 28'. E. long. 120°.

**NERBA**, a town of Saxony, in Thuringia, on the Unstrutt; 15 miles N.W. of Naumburg.

**NERBUDDAH**, a river of Hindoostan, which, as well as the Soane, has its rise in a pond or lake on the southern confines of the Allahabad province. These rivers, flowing from the same lake, make, conjointly with the Ganges, an island of the northern part of Hindoostan, and pursue their course in opposite directions 1500 miles. The Nerbuddah discharges itself into the gulf of Cambay, 31 miles N. of Surat.

**NERE**, a town of Hindoostan, in the circar of Ellichpour; 30 miles E.N.E. of Ellichpour.

**NEREALLY**, a town of Hindoostan, in Vissapour; 25 miles E. of Anamagur.

**NERECHTA**,



NERECHTA, a town of Ruffia, in the government of Koftroma; 16 miles S.W. of Koftroma.

NEREIDS, NEREIDES, sea-nymphs, or fabulous deities of the ancients, supposed to inhabit the sea.

The Nereids were fifty in number, all the daughters of Nereus, by the nymph Doris. Their names and genealogies are described in Hesiod. Homer gives their names, with some variation, and reckons only thirty-two of them. The ancient monuments, as well as medals, agree in representing the Nereids as young women riding upon dolphins, and upon sea-horses, holding commonly in one hand Neptune's trident, and in the other a dolphin, and sometimes a victory and a crown: sometimes we see them half women and half fishes, conformable to this verse in Horace's Art. Poet.

"Definit in piscem mulier formosa superne."

Such we see them on a medal of Marseilles, and upon some others. It has been a subject of inquiry with regard to the Nereids, whether they are to be considered as metaphorical personages, as their names signify, or as real beings. Those whom Hesiod and Homer name are mostly poetical persons; but some of them had a real existence, as Cassiope, the mother of Andromeda, Psamathe, the mother of Phoece, from whom the country into which she removed was called Phocis, Thetis, the mother of Achilles, and some others. It must be observed, however, that the name of Nereids was given to princesses who inhabited either some islands on the sea-coasts, and became famous for the establishment of commerce and navigation. It was transferred afterwards to some poetical personages, who owe their existence only to etymologies conformable to the qualities implied in their names, and even to certain fishes, that have the upper part of their bodies much like that of women. Pliny says, in the time of Tiberius, there were seen upon the sea-shore a Nereid such as the poets represent them, "humana effigie," and that an ambassador from Gaul had told Augustus that upon the sea-coasts several dead Nereids had been seen. See NYMPH.

NEREIS, in *Zoology*, a genus of the class and order Vermes Mollusca, of which the generic character is; body long, creeping, with numerous lateral peduncles, or feet, on each side. The feelers are simple, but in certain cases there are none. It has sometimes no eyes, sometimes two, and sometimes four. Of this genus there are twenty-nine species, divided into three sections, according as the mouth of the worm is furnished with a claw or forceps; or with a proboscis; or with a tube. Most of the species are found in the North seas, but three or four are met with on our own coasts.

#### A. Mouth furnished with a Claw or Forceps.

##### Species.

VERSICOLOR. This species is characterised with a body subdepressed; and with peduncles pointed, and furnished with bristles. It is about four inches long, and is found in European seas. The body has about eighty-five segments, growing slenderer behind; the colour of the worm is of an ochre yellow, with a dull red streak down the middle; the tail, and anterior segments of the body, are of a dirty greenish hue, but towards the middle it is shining, with various iridescent colours.

\* NOCTILUCA. Body blue-green, with twenty-three segments; scarcely visible to the naked eye. This species is found in most seas, and the animals are of that kind which frequently illuminate the water, making it appear as if it were on fire: the animals are extremely minute, pellucid, and highly phosphorescent, giving an uncommonly lucid

splendour to the waves in an evening: by their extreme minuteness they easily escape observation, but may be detected by passing a small quantity of the water through blotting-paper.

Barbut, in speaking of this species of the Nereis, says, "I have observed with great attention a fish just caught out of the sea, whose body was almost covered with them, and have examined them in the dark: they twist and curl themselves with amazing agility, but soon retire out of our contracted sight; probably their glittering dazzles the eye, and their extreme minuteness eludes our researches. It is to be observed, that when the unctuous moisture, which covers the scales of fishes, is exhausted by the air, these animals are not to be seen, nor are the fishes then noctilucous, the matter being, perhaps, their nourishment when living, as they themselves afford food to many marine animals. They do not shine in the day-time, because the solar rays are too powerful for their light, however aggregate or immense their number."

FIMBRIATA. The body of this species is subdepressed; the peduncles are cirrate and glandular. It inhabits the Baltic, is about three inches long, and linear. The body is of a fulvous hue, with a blue line down the middle of the back and belly; the head is furnished with eight feelers; and the tail is terminated with two threads.

ARMILLARIS. The body of this also is subdepressed; the peduncles conic, with glandular cirri. This, like the last, is found in the North seas, buries itself deep in the sand, and is about an inch and a half long. The body is filiform, with three moniliform feelers on each side the head; it has about 120 articulations, all armed with a peduncle on each side the tail, ending in two long threads.

MOLLIS. This species has lateral fascicles of hair above the peduncles. It is found in the seas about Norway.

PELAGICA. Body above convex; peduncles cirrate and warty. This is found in European seas, among the roots of ulvæ, under stones, and in empty shells, is about seven inches long, and has a kind of flexuous motion.

TUBICOLA. Body subdepressed, and peduncles slightly cirrate and globular. It inhabits the Northern seas. The body is linear, with five straight feelers on the head: it forms for itself a rough tube of the indurated moisture exuding from its pores.

NORWEGICA. The body of this is convex; the peduncles are cirrate and feathered. It is found in the bays about Norway, and is the size of a goose-quill. The body has 120 segments.

PINNATA. Body convex; peduncles cirrate and pinnate. This also is found in the bays of Norway, on a blueish clay. The body is of a chestnut colour, with a blue gloss; the segments are from 106 to 122 in number; the head has five jointed feelers, and the tail ends in two thick filaments.

CORNICULATA. Body subdepressed, pinnate; the peduncles are furnished with a cirrus and long simple bristle. It inhabits the Norway seas, and is extremely minute and active.

PUSILLA. Body depressed; peduncles cirrate, with jointed filaments. Found also in the Norway seas.

INCISA. The body is convex; the segments distant; and the peduncles are simple and cirrate. It inhabits the Greenland seas, far from land, and among the roots of the larger ulvæ. It is about two inches and a half long.

APHRODITOIDES. The body of this is depressed, and not grooved; the peduncles are cirrate, and furnished with papillæ. It inhabits the Greenland seas, and is found among the mud at bottom; is an inch long.



B. *Mouth furnished with a Proboscis.*

## Species.

\* *CÆRULEA*. Smooth, depressed, blueish-green, pellucid. This is found in the seas about our own coasts. The body is shining, about four inches long, with a groove along the belly.

\* *VIRIDIS*. The body of this species is depressed; the peduncles have lanceolate lamellæ, or scales. This is an inhabitant of the Northern seas, and has been found at Tenby; and is from two to three inches long. The body is filiform, and of a grass-green colour, with 130 equal segments.

*MACULATA*. Body convex; peduncles with heart-shaped scales. It inhabits the North seas, and is from two and a half to four inches long.

*CRASSA*. Body depressed; proboscis cylindrical; peduncles red, with branched bristles. Inhabits the ocean; is seen on floating fucus, and is four inches long.

*STELLIFERA*. The body of this species is depressed; and the peduncles furnished with elliptic scales. It inhabits the Northern seas, particularly in the bays of Norway.

*PUNCTATA*. Body slightly depressed; the peduncles furnished with very long cirri. This species is likewise found in the Northern seas, in oyster-shells, or under stones.

*ALBA*. Body convex; front horned; peduncles bifid. Found in the seas about Norway, on a clayey bottom. The body of this species is white, annulate, and tapering behind; it has no eyes; and the proboscis is membranaceous, very pellucid, and capable of being inflated to twice the width of the body; there are seventy-seven peduncles on each side.

*FLAVA*. Body depressed; peduncles with oblong-ovate scales. It is found in the Northern seas, among the roots of ulvæ, and is about two inches and a half long. The body is yellow, and is divided into about 140 segments.

*LONGA*. The body of this species is slightly depressed, and furnished with conic papillæ instead of scales of the peduncles. It inhabits the shores of Greenland, with a clayey or sandy bottom near the mouths of rivers.

*PRISMATICA*. Body triangular; peduncles distant, with a single setigerous papilla cirrate above. This is found on the shores of Greenland, and is about half an inch long.

*BIFRONS*. Body depressed; peduncles with a single setigerous papilla cirrate above, the middle ones also branched. This also is found in the Greenland seas, is an inch long, has fifty-six segments, and is continually moving.

*CÆCA*. Body slightly convex; it has two very short feelers, and the peduncles have double ciliate lamellæ. It inhabits the sandy shores of Greenland, under stones, like the *LUMBRICUS*, (which see). It burrows very deep, and is about eight inches long. The body is divided into from 86 to 100 segments.

*EBRANCHIATA*. Body round, annular, and tapering both ways; peduncles cylindrical, short and double, pinnate on each side; it has no feelers, and inhabits the German and Indian seas. The body is of a blueish or greyish-brown, and is divided into 269 segments.

*LAMELLIGERA*. Body flattish, and tapering both ways; proboscis stellate, with four flesh-coloured spines; the peduncles are compressed and furnished with a semilunar scale above, and a larger semiheart-shaped one beneath. This is found in the Indian, Mediterranean, and also in the Northern seas, among aquatic plants; and is nearly two feet long. The body of this species is said to be divided into from 200 to 550 segments; the head has four feelers.

*CILIATA*. Body depressed; mouth cylindrical, retractile; the anterior margin ciliate; it has no feelers.

C. *Mouth furnished with a Tube.*

## Species.

*PROLIFERA*. Body depressed; peduncles cirrate; front with a single feeler. It inhabits the bays of Norway, and its body is divided into from 32 to 46 segments. Instead of forceps and a proboscis, it has a thick flexuous pellucid tube.

*NERESHEIM*, in *Geography*, a town of Germany, in the principality of Oettingen, near which is a princely abbey of the same name; 12 miles S.S.W. of Oettingen.

*NERESI*, a town on the S. side of the island of Brazza, so called by Greek derivation from the reservoirs of water near it. Its situation is not pleasant, though it is the residence of the governor and a place of resort, and the only good lands in the island are adjacent. The air is said to be intensely cold. This place was more considerable in a former period of piracies; but since other places near the sea have been inhabited, it has lost much of its population, and its deserted houses are mouldering into ruins.

*NERESTBAD*, a town of Persia, in the province of Kerman; 90 miles N. of Mastih.

*NERETO*, a town of Naples, in Abruzzo Ultra; 36 miles N.N.E. of Aquila.

*NEREUS*, in *Mythology*, the son of Pontus and Terra, who, by Doris, produced the Nereids. The ancients reckon Nereus among the sea-gods, and, according to Hesiod, he was the son of Oceanus and Tethys. Hesiod highly celebrates this Nereus as a mild and peaceful old man, a lover of justice and moderation. From Apollodorus we learn, that Nereus commonly resided in the Ægean sea, where he was encircled with Nereids, who diverted him with their songs and dances. Accordingly Pausanias takes the old man who was worshipped by the Gytheates, and who according to them had his palace in the sea, to have been no other but Nereus, and in proof of it he cites these verses in Homer:

"Ye Sister Nereids! to your deeps descend,  
Haste, and our Father's sacred feat attend."

Pope's *Iliad*, 18. 177.

Some authors have been of opinion that Nereus was the inventor of hydromancy, or of the science of prediction by water, whence he was represented as a great soothsayer; and this might have been the reason for ranking him among the gods of the sea.

*NERFLING*, in *Ichthyology*, the name of a fresh water fish of the leather-mouthed kind, common in some of the lakes in Germany, and there called also the *orff* or *oorve*, and seeming to be the same with the common *rudd*.

There are two kinds of this fish, the flesh of the one of which, when dressed, is white, and that of the other yellowish or reddish. The latter kind is most valued.

*NERFUA*, in *Geography*, a small island in the gulf of Finland. N. lat. 60° 12'. E. long. 28° 9'.

*NERHELBENO*, a town of Poland, in the palatinate or Kiev; 48 miles W.N.W. of Kiev.

*NERI*, *PHILIP DE*, in *Biography*, an Italian writer, was born at Florence in the year 1485, of a noble family. In 1532, he was chosen by duke Alexander one of the magistrates, afterwards denominated senators. He died at Florence in 1536. He was author of "A History of Florentine Affairs," from 1215 to 1237, which was printed at Augsburg in 1728.

*NERI*, *POMPEIO*, a native of Florence, who became professor of the law at Pisa, and was employed in state affairs by the duke of Lorraine, and the empress Maria Theresa. He founded the Academy of Botany at Florence, where



he died in 1776 at the age of 69. He wrote observations on the ancient and present state of the Tuscan nobility; on the imports of Milan; on the legal value of the coin, and the difficulty of fixing and maintaining the same. There was also of this name and family Anthony Neri, well known by a work to which we have had occasion to refer, on the "Art of making Glafs."

**NERIABAD**, in *Geography*, a town of Hindoostan, in Guzerat; 14 miles S. of Mahmoodabad.

**NERICIA**, or **NERITIA**, a province of Sweden, bordering on three remarkable lakes, *viz.* Wener, Wetter, and Hiemar, and bounded on the N. by Westmanland, on the E. by Sudermanland, on the S. by East and West Gothland, and on the W. by Warmeland. It is about 20 leagues in length, and 15 in breadth, and consists of mountains, forests, mines, lakes and rivers, with some level and tolerably fertile tracts. This country has iron and sulphur mines, quarries of lead-stone, alum, lime-stone, with iron-founderies, and also sulphur and lead works. It has been long famous for its flourishing manufactures of all kinds of hard-ware. Its inhabitants are principally employed in the mines and forges, in hunting, and in fishing. Its chief town is Orebro.

**NERILKERY**, a town of Hindoostan, in Mysore; 22 miles E. of Seringapatam.

**NERITA**, in *Natural History*, a genus of the Vermes Testacea class and order, of which the generic character is this: the animal is a limax; shell univalve, spiral, gibbous, flattish at the bottom; the aperture is semiorbicular, or femilunar; pillar-lip transversely truncate, flattish. Seventy-five or six species are enumerated as belonging to this genus, separated into three divisions, according as they are umbilicate; imperforate with toothless lips, or imperforate with lips that are toothed. The shells are generally very minute, seldom exceeding the size of a pea, usually polished, often banded, and the colours vary in the different species.

#### A. Umbilicate.

##### Species.

**CANRENA**. The shell of this species is smooth, with a slightly pointed spire, and it has a gibbous bifid umbilicus. It inhabits India, Africa, and America, in almost innumerable varieties of size, colours, and marks, being white, yellowish, or blueish, with variously disposed spots, lines, and clouds.

**CANCELLATA**. Shell with decussate striæ and impressed dots; the spire subclavate; umbilicus gibbous and bifid. This species is found in several of the American islands. The shell is white with obsolete spots, with sometimes a fulvous band and rays.

\* **GLAUCINA**. Shell smooth, glossy; spire rather obtuse; umbilicus partly closed by the pillar-lip, which is gibbous and two-coloured. It inhabits the coasts of Barbary, and is sometimes found on our own shores. It is about two inches long.

**VITELLUS**. Shell subglobular, with a perforated equal umbilicus. It inhabits the Indian oceans. The shell is yellow, with white shades, and spots disposed in rows, above with a dusky band, within and round the umbilicus it is white.

**ALBUMEN**. Shell convex; umbilicus somewhat heart-shaped, with a flattened lobe. This species is found at the Cape of Good Hope, on the Barbary coast, and at the Nicobar and Molucca islands: it is, however, a very rare shell, but smooth and broad, of a pale yellow colour, beneath it is white and flat.

**MAMMILLA**. Shell ovate, glabrous; umbilicus partly covered; aperture ovate. There are four different varieties of this species; found in India, and divers parts of America. It is more than two inches long.

**LEUCOZONIAS**. Shell subglobular and solid, of a bay colour, with white bands; the spire is somewhat depressed. It is more than an inch long.

**SPADICEA**. Shell subglobular and solid, chestnut colour, but beneath white; the tip is blueish, throat with bands, one also on the back. Found in the island of Mauritius, and is rather large.

**Rufa**. Shell thin, rufous; umbilicus darker, with a white border; the back and base of the spire have a white band on each, the throat with a reddish band; pillar with a brown fillet.

**FULMINEA**. Shell subglobular, with angular tawny lines, and flattened lobe. There are three varieties, found, though but rarely, in Africa. The shell is white or yellowish.

**STERCUS-MUSCARUM**. Shell smooth, snowy, with rufous spots and specks; the umbilicus is gibbous and bifid. It inhabits the Mediterranean and American seas; and is thought to be a variety of the *N. canrena*.

**ORIENTALIS**. Shell subglobular, polished, very smooth, the base of the spire a little wrinkled; the pillar is snowy. It is found in the Eastern seas. There are two varieties; the shell of the one is of a buff colour on each side, with a narrow white band in the middle; the other is entirely snowy.

**CRUENTATA**. Shell subglobular, white, with red spots and dots, the lip obtuse and blueish, within blueish; umbilicus spiral.

**RUGOSA**. Shell wrinkled, within glabrous, pale testaceous; umbilicus bordered with white. It inhabits the American islands. The shell is covered with oblong, crowded wrinkles.

**MAROCHENSIS**. Shell subglobular, smooth, light green, within brownish, and livid at the tip, a little wrinkled at the angle of the whorls. It is found in Africa. The shell is sometimes marked with feathered bands, the younger ones are thin and pellucid.

**SULCATA**. Shell subglobular, obliquely plaited; spire mucronate; umbilicus bifid. The spire has four whorls.

**ARACHNOIDEA**. Shell white, reticulate, with reddish lines, and blackish at the tip; whorls convex; umbilicus nearly covered.

**VITTATA**. Shell subglobular, brown, with a double white fillet in the middle, reticulate and denticulate on each side. This is an African shell.

**MELANOSTOMA**. Shell thin, pellucid, smooth, oblong; the first whorl ventricose, flat, and very large, the others compressed; the umbilicus is half closed. There are five varieties of this species. It inhabits the Indian sea, and is two inches long.

\* **PALLIDULA**. Shell semitransparent horn-colour, the whorls rather prominent; aperture femilunar, and very patulous; the umbilicus is large. It inhabits the coast of Kent and Dorset.

**PAPILLA**. Shell pellucid, thin, oblong, with decussate striæ; of a dirty yellow colour; the aperture is suboval; the pillar white, and the umbilicus half closed. It inhabits the shores of Tranquebar.

**CLATHRATA**. Shell depressed, ovate; transversely undulate, and longitudinally ribbed, the ribs flat, oblique, and femilunar; spire papillary. Found in a fossil state in Campana.

**VALVATA**. Shell flattish, with a circinated aperture.



## NERITA.

It inhabits the North seas; the inhabitant of the shell has two setaceous tentacula, bearing the eyes at the posterior angle.

**ISLANDICA.** Shell globular, subacute, and rather thick; it has four whorls, separated by very deep grooves. It is found in the Northern seas.

**AFFINIS.** Shell globular, and rather thick, with a sub-mucronate spire, and three whorls. It inhabits New Zealand, and is probably a *TROCHUS*; which see.

### *B. Imperforate, with toothless Lips.*

#### Species.

**CORONA.** Whorls of the spire crowned with spines. It inhabits India and America, and is minute. The shell is sometimes blackish, with longer and shorter spines, thinly striate.

**RADULA.** Shell grooved, with equal tubercles. It inhabits the Indian islands, and is the size of a walnut.

**CORNEA.** Shell obsoletely striate. It inhabits the Red sea. The shell is fragile, brown, white, or pale violet, with longitudinal white or testaceous bands.

\* **FLUVIATILIS.** Shell rugged, spotted, streaked, or reticulate. There are four varieties that inhabit the rivers of Europe and Barbary; the shell of this species is not half an inch long.

\* **LITTORALIS.** Shell smooth, with a carious crown, and four whorls. It inhabits the sea-rocks of Europe, and is the size of a horse-bean. The shell is yellow or ferruginous, with or without bands, spots, or dots of various colours.

\* **LACUSTRIS.** Shell smoothish, horny or blackish, ending in an exquisitely fine point. It inhabits still waters, and the warm springs of Europe; it very much resembles the last named species, but is horny or blackish, and sometimes dotted with white.

**MAGDALENÆ.** Shell with wide grooves, black, but within white, the lip yellowish; the lid is smooth, and two-toothed. It inhabits the Magdalena island in the Southern ocean, and is more than half an inch long.

**MARGINATA.** Shell thin, with decussate striæ, tuberculate, black, with ochraceous spots, subglobular; aperture margined outwardly.

**DUBIA.** Shell thin, pellucid, ovate, polished, dull yellow, varied with black; outer lip acute, inner glabrous. This is a very rare shell, and its place of residence is not known.

\* **PELLUCIDA.** Shell smooth and pellucid, with three whorls. It is found on the coast of Pembroke-shire, and is very minute.

\* **ALBA.** Shell smooth, subpellucid, with two whorls. This is found, like the last, on the Pembroke-shire coast, and is very minute.

### *C. Imperforate, with Lips toothed.*

#### Species.

**PULLIGERA.** Shell smooth, coarse, with an excavated eye-like small spire; inner-lip smooth, crenulated.

**UNDULATA.** Shell thin, smooth, undulate; crown obtuse; outer lip substriate and toothless; the inner one is a little denticulate.

**ATERIMA.** Shell thick, opaque, globular, deep black with coloured lines, within white; outer lip glabrous, inner lip tuberculate, and wrinkled.

**LARVA.** Shell smooth, subglobular, white, with yellowish-brown bands; the crown is obtuse; and the lip

slightly denticulate. It is found at Amboina, though it is very rare.

**PUPA.** Shell smooth, roundish, milk-white, with transverse parallel black striæ on the whorls; the lip is flat, with hardly visible teeth.

**BIDENS.** Shell smooth; inner lip two-toothed. The shell is the size of a pea, and is either black or reddish, obsoletely striate, sometimes of a pale yellow, with whitish clouds, and three black bands.

**VIRIDIS.** Shell smooth and green; the inner lip is crenulate in the middle. It inhabits Minorca and Jamaica.

**VIRGINIATA.** Shell smooth, ovate; inner lip denticulate. This is found in the rivers of India and South America, and is from two to ten lines long.

**POLITA.** Shell smooth, with an obliterated crown; the lip is toothed on each side. There are four varieties, found in the Indian and South seas. The shell is ovate, solid, polished, variously ornamented with spots, clouds, and bands, or varied with black and white.

**PELORONTA.** Shell striate; lips toothed, the inner one flattish and wrinkled. It inhabits the American islands. It resembles the *N. grossa*, but is of a red colour, the grooves are not so deep, the outer lip is not crenate, and the inner one not convex. See *Grossa* farther on.

**ALBICILLA.** Shell striate; lips slightly toothed, the inner one tuberculate. It is found in the Indian ocean, and on the shores of the Cape of Good Hope.

**HISTRIO.** Shell grooved and transversely striate; inner lip toothed.

**PLICATA.** Shell grooved; lips toothed, the outer one with acute conic teeth on each side. This is found in divers parts of India.

**GROSSA.** Shell grooved; lips toothed, the inner one convex and wrinkled. It is found about the Molucca islands. The shell is rounded, white, with black and cinereous veins; the crown is a little prominent; first whorl has thirteen or fourteen ribs; outer lip crenulate outwardly and toothed within; inner lip white, with a yellow spot, and three or four teeth.

**CHAMÆLEON.** Shell with twenty grooves; lips toothed, the inner one wrinkled and tuberculate. It inhabits the Indian ocean. The shell is varied with alternate, undulate, black and white rays, or yellowish, undulate with black and white, subglobular; the ribs are unequal, and crossed by very fine lines; the crown is depressed and lateral.

**UNDATA.** Shell with thirty grooves; lip toothed, the inner one wrinkled and tuberculate. It inhabits the Indian seas.

**EXUVIA.** Shell grooved; lips toothed; the inner one tuberculate. It is found on the Indian coasts.

**MAXIMA.** Shell solid, thick, glabrous, with undulate black and yellowish rays; outer lip toothless, inner one a little concave and four-toothed. The shell is very large, within and at the aperture snowy; inner lip smooth, and very broad.

\* **TEXTILIS.** The shell of this species is marked with angular black lines, and sixteen crenate ribs and grooves; the outer lip is crenate without, and toothed within; inner lip wrinkled above and tuberculate beneath; the palate is toothed.

**ATRATA.** Shell deep black, glabrous, and very thinly striate above; both lips white, the outer one very thinly grooved, and slightly toothed within, the inner one concave, wrinkled, and tuberculate. It inhabits the Atlantic, American, and South seas.

**ASCENSIONIS.** Shell with sixteen grooves; the ribs are spotted with white, and the crown is a little prominent; the  
outer



outer lip is glabrous on each side; and the inner one a little concave, yellowish, and toothed. It inhabits Ascension island, hence its specific name; it is a larger species; the crown is generally worn down, rarely black; and the lid is thin and pellucid.

**LINEATA.** Mouth of the shell and both lips white; whorls round, surrounded with black parallel striæ, the spaces between the striæ violet; outer lip striate within. It is found in the Malacca seas.

**VERSICOLOR.** Shell with blackish, blueish, red and white square spots, and bands spotted with red and white; the inner lip is striate within, and toothed on each side. It inhabits the Antille islands. The shell is set with round whorls; the crown is a little prominent; inner lip wrinkled above, and four-toothed beneath, the middle teeth larger.

**PICA.** Shell white, radiate with black without, with transverse, rounded, smooth striæ; inner lip wrinkled, and four-toothed. This is found in the Indian seas. The crown is a little prominent; the outer lip crenate without, and striate within.

**COSTATA.** Shell yellowish within, subglobular, surrounded with thicker striæ; the interstices snowy; both lips toothed, the outer one crenate without; inner one subconvex, wrinkled and tuberculate. It inhabits the Nicobar islands.

**QUADRICOLOR.** Shell subviolet, with a yellowish tip, within it is white, with elevated black striæ; both lips toothed; the outer one grooved within, inner one wrinkled. It inhabits the Red sea. The shell has sometimes white lips, and is sometimes white within.

**MALACCENSIS.** Shell grooved, yellowish within; crown a little prominent; outer lip unarmed and crenulate outwardly, inner lip yellowish; smooth. This is found on the coast of Malacca.

**ANTILLARUM.** Shell subglobular, black, within it is white, grooved and striate; the crown is obtuse; both lips are wrinkled and denticulate. This is a very common shell in the Antilles.

**FLAMMEA.** Shell subglobular, with crowded transverse striæ, white with purplish undulate rays; both lips toothed. There are two other varieties, the one shaded with red, the rays inclining to black; the other with bands partly livid, partly dotted with red. They are found in the American islands.

**FULGURANS.** Shell subglobular, with crowded transverse striæ, deep black, with ochraceous rays; both lips slightly denticulate, the inner one tuberculate in the middle. It is found in the American islands.

**TESSELLATA.** Shell obtuse, transversely striate, the striæ are marked with nearly square white and black spots; both lips are denticulate. It is found in the several islands situated between Africa and America, and is of a middle size.

**BIFASCIATA.** Shell blackish, with two grey bands; the crown is white. It inhabits India. It is uncertain to what section it belongs.

**LITTERATA.** Shell subglobular, white, with various characters; the inner lip is crenulate and toothed. A variety of this species is marked with bands composed of parallel lines. It inhabits India.

**VIOLACEA.** Shell ovate, solid, smooth; it is of a violet colour, dotted with white; the inner lip is denticulate beneath. A variety is marked with chestnut spots, varied with black. The shell is rarely red or whitish, sometimes dark grey or white.

**SENEGALENSIS.** Shell ovate, obtuse, solid, and of a deep black colour, within it is white, grooved; both lips

are toothed. This, as its specific name imports, is found in Senegal; an inch broad, and about half as wide.

**PROMONTORI.** Shell black, ovate, pointed; with thirty grooves. This is an African shell, is twice as broad as it is long, sometimes varied with white; the crown is composed of three whorls; the left lip is wrinkled.

**TRICOLOR.** Shell variegated red, black, and whitish; the first with fifteen elevated striæ; both lips toothed. This is found in Africa.

**PERVERSA.** Shell surrounded with belts; spire contrary; aperture eight-toothed. Hitherto it has been found in a fossil state only.

**TURRITA.** Shell with alternate white and black bands, within white; crown very much elevated; the outer lip acute. This inhabits the Antille islands, in fresh waters.

**ACULEATA.** The shell is blackish, transversely striate; the striæ are spinous; the inner lip is flattish, smooth, and slightly toothed. It inhabits the rivers of India, and resembles the *N. pulligera* above described.

**NERIUM**, in *Botany*, the Oleander or Rosebay, is evidently the *νερίον* of Dioscorides, whose description cannot be mistaken. Linn. Gen. 116. Schreb. 164. Willd. Sp. Pl. v. 1. 1234. Mart. Mill. Dict. v. 3. Brown. Afclep. in Mem. of the Wernerian Soc. v. 1. 71. Ait. Hort. Kew. ed. 2. v. 2. 67. Juss. 145. Tourn. t. 374. Lamarck Illustr. t. 174.—Class and order, *Pentandria Monogynia*. Nat. Ord. *Contortæ*, Linn. *Aposineæ*, Juss. Brown.

Gen. Ch. *Cal.* Perianth inferior, minute, in five deep, acute, permanent segments, with small internal teeth. *Cor.* of one petal, salver-shaped; tube cylindrical, shorter than the limb; mouth inflated, crowned with five leaflets, cut into several narrow segments; limb large, in five deep, twisted, inequilateral, obtuse segments, without any appendage. *Stam.* Filaments five, awl-shaped, short, inserted into the middle of the tube; anthers arrow-shaped, awned with long threads, cohering over the stigma. *Pist.* Germens two, superior, ovate; style one, common to both germens, thread-shaped, dilated at the top, the length of the tube; stigma abrupt, seated on a small circular base. *Peric.* Follicles two, cylindrical, erect, long, pointed, bursting lengthwise. *Seeds* numerous, oblong, imbricated, each with a tufted crown.

Eff. Ch. Corolla salver-shaped, contorted; its mouth crowned with five divided leaflets. Anthers awned, cohering. Follicles two, erect. Seeds crowned with down.

1. *N. Oleander.* Common Rosebay. Linn. Sp. Pl. 305. Willd. n. 1. Ait. n. 1. Miller. Illustr. t. 12. (*Nerium* five *Rhododendrum*; Matth. Valgr. v. 2. 447. Duham. Arb. v. 2. t. 12. Ger. em. 1406.)—Leaves ribbed underneath. Segments of the calyx prominent. Crown of the corolla with two flat cloven segments.—Native of Spain, Portugal, Italy, and the Levant, about the banks of rivulets, in low moist situations. Oriental travellers have, with great taste and probability, supposed this to be the bay-tree, to which the righteous man is compared by the royal psalmist. It was early introduced into our gardens, and is a hardy greenhouse shrub, flowering from June to October. In Italy it usually decorates court-yards. The stem is arboresecent, very much branched. Leaves three together, on short stalks, linear-lanceolate, acute, entire, smooth, coriaceous, evergreen, marked with numerous transverse ribs or veins beneath. Flowers numerous, terminal, corymbose, large and handsome, but inodorous, usually of a rose-colour, occasionally white. There is also a much-admired double variety. *Seed-vessels* six inches long, ribbed, almost woody. One of the most beautiful of insects,



*Sphinx Nerii*, feeds on this shrub, and is often taken on the coats of Nice and Genoa.

2. *N. odorum*. Sweet-scented Rosebay. Ait. Hort. Kew. ed. 1. v. 1. 297. ed. 2. v. 2. 67. Willd. n. 2. (*N. indicum angustifolium*, floribus odoratis simplicibus; Herm. Lugd-Bat. 447. t. 448; fl. plenis; t. 449. Tsjovanna-areli; Rheede Hort. Malab. v. 9. t. 1. 1.)—Leaves ribbed underneath. Segments of the calyx erect. Crown of the corolla with numerous thread-shaped segments.—Native of the East Indies. Cultivated in Chelsea garden in 1683. Ait. It is kept in the stove, flowering from June to August. During that time it will bear to stand in the window of a warm room, though much more tender than the former, from which it differs in the sweet almond-like scent, and paler hue, of its flowers, which have a yellow tinge in the middle, and a much-divided capillary crown.

3. *N. salicinum*. Willow-leaved Rosebay. Vahl. Symb. v. 2. 45. Willd. n. 3. (N. n. 18; Forsk. Ægypt-Arab. 205.)—Leaves slightly veined beneath, obtuse.—Native of Arabia Felix.—A large tree, whose leaves are said by Forskall to resemble *Salix fragilis*.

These are all the species that Mr. Brown retains. *N. zeylanicum* and *antidysentericum* of former authors constitute his *Wrightia*. He judges *N. coronarium* to be a *Tabernaemontana*, and *divaricatum* to be the very same plant. *N. obesum* of Forskall and Vahl, (see as above,) is certainly no *Nerium*; perhaps a new genus.

NERIUM, in Gardening, comprehends plants of the evergreen, flowering, shrubby kind, of which the species cultivated are, the common rosebay, or oleander (*N. oleander*); the sweet-scented rosebay, or oleander (*N. odorum*); the oval leaved rosebay (*N. antidysentericum*); and the broad-leaved rosebay (*N. coronarium*).

It may be remarked, that in warm dry summers the first sort makes a fine appearance, the flowers then opening in great plenty; but in cold moist seasons the flowers often decay without expanding, unless the plants are placed in a greenhouse, or under a glass case. The variety with white flowers is the most tender; but there are others, as the stripe-leaved; the broad-leaved; double-flowered; the striped double-flowered, and with different shades of red, from purple to crimson or scarlet.

The second species has a variety with leaves, six inches long, and one inch broad in the middle, of a much thinner texture than those of the first, and their ends are generally reflexed; they are of a light green, and irregularly placed on the branches by pairs, alternately, or by threes; the flowers are produced in very large bunches at the end of the branches, upon long peduncles; they have three or four rows of petals one within another; they are much larger than those of the common sort, and smell like those of hawthorn; the plain flowers are of a soft red or peach colour; but in most they are beautifully variegated with a deeper red, and make a fine appearance: the usual time of flowering is in July and August, but in a warm stove it will continue in flower till Michaelmas: from the flowers being double, they are not succeeded by seeds. They are all supposed to have a poisonous quality.

*Method of Culture*.—These different species and varieties of plants may be increased by layers, and suckers from the roots.

It is necessary that the layers should be made in the early spring months, as from March till May, but the earlier the better; the youngest lower branches being chosen for the purpose, which should be slit-layed, giving plenty of water during the summer, and they will be most rooted by the autumn following; but by plunging the pots in which they are

laid in a bark hot-bed, their rooting may be greatly forwarded: when they are properly rooted, they may be taken off, and removed into separate pots for continuing.

But the cuttings should be planted in the spring, or the early part of summer, taking off the young shoots, five or six inches long, and planting them in large pots of rich mould, placing them under glasses, and giving water and shade occasionally: but, if plunged in a bark-bed, it will greatly promote and forward their rooting.

And the suckers arising from the bottom are sometimes furnished with roots; but when this is not the case, a small slit should be given at the lowest part; afterwards applying fresh mould around it, when fibres will be emitted by the end of summer; they may then be taken off and potted separately in proper pots. With regard to the first sort and varieties, they are rather hardy, but should be kept constantly in pots or tubs, to be protected through severe winters when necessary.

And the other sorts are often placed in the hot-house during winter, but when less tenderly treated, and supplied more freely with air in mild weather, they are said by some to succeed better, provided they be carefully screened from every effect of frost or severe cold.

These are very ornamental among other potted plants of less tender kinds.

NERLI, FILIPPO, in *Biography*, an Italian historian, was born in 1485, and became a senator of the city of Florence. One of the same name, and thought by some to be the same person, was governor of Modena for the church in 1526, and, attempting to return to Florence in 1527 with Guicciardini, was excluded from that city. He died in 1556. His work, entitled "I Commentarii de' Fatti civili occorsi nelle Città di Firenze del 1215 fino al 1537," remained in manuscript till it was published in Florence in 1728.

NERO, LUCIUS DOMITIUS, a Roman emperor, the son of Cneius Domitius Ahenobarbus, and Agrippina, the daughter of Germanicus, was born in the 37th year of the Christian era. Both his parents were notorious for the profligacy of their lives, and of this the father was so conscious, that he affirmed, at the birth of his son, that, springing from such a stock, he must be a monster born for some great public calamity. The favour of the people was manifested to him at his first appearance in the secular games, given by the emperor Claudius in the year 47. This emperor, having married Agrippina, adopted Nero, then only in his thirteenth year, as his successor, though he had a son of his own. On the occasion, he received the names of Nero Claudius Cæsar, and in the following year he assumed the *toga virilis*, was designated consul, and declared prince of the Roman youth. His marriage with Octavia, the emperor's daughter, took place in the year 53, and in the following year, the reigning emperor having been poisoned by his abandoned wife, Nero was raised to the throne. To Agrippina are to be attributed all the bad acts of the early part of his reign. His own conduct, as prompted by his tutor Seneca and governor Burrhus, appears to have been liberal and laudable, and his actions corresponded with the discourses that were put into his mouth. Historians mention several acts of clemency which are highly honourable to his memory, if they could be supposed to proceed from his own unbiassed inclination. One of the earliest irregularities of this prince was an attachment to Acte, a freed-woman of a debauched character, who obtained a great ascendancy over him, while he displayed the utmost aversion to his wife Octavia. His tutor indulged him in this passion, to keep him from more criminal amours, and his mother, finding



finding that her reproaches were of no avail, at length convinced at his conduct. She, indeed, to keep her son in a state of dependence and subjection, affected to countenance the claims of Britannicus to the sovereignty, which led Nero to remove him out of his way by poison. The fatal dose was administered as he sat at table with the emperor, his wife, and mother. Its effects were instantaneous: he fell down speechless, and being carried out, very soon expired. After this he made an attack upon his mother's life. (See the article *AGRIPPINA*.) The levity and turbulence of Nero's disposition were displayed in the amusement which he followed, of rambling about the streets disguised, by night, with a band of disorderly companions, robbing and abusing all that fell in their way, and carrying off all the pillage he could lay his hands on, which he sold the following day by auction in his palace. There was, in short, no species of brutality in which he did not delight; nevertheless, the public affairs of the empire were well managed during the first few years of his reign, and many salutary regulations took place at home and abroad. The senate was permitted to act freely on several occasions, and the political counsellors of the emperor were able and experienced. The Roman arms were successful in the East under the command of Corbulo, who subdued Armenia, and conferred its crown upon Tigranes. After the death of his mother, he plunged into a course of dissipated folly, that was highly derogatory to his rank: he exhibited his skill as a charioteer, and claimed public applause as an actor in the theatre. In the sixth year of his reign, he instituted games in imitation of those of Greece, which were at the same time gymnastical, musical, and equestrian. He named them *Neronian* games, and in his own person disputed the prizes of eloquence and poetry, in which he obtained an easy victory, none venturing to give the palm to his competitors. In the year 62 he divorced his wife, whom he banished, and afterwards put to death, and took in her place Poppæa, a woman of distinguished beauty, but of truly infamous character. From this time, acts of cruelty and rapacity alone varied the scenes of indecent folly and abandoned debauchery, which constituted the habitual life of Nero. The terrible conflagration of Rome in the year 64, is by Suetonius and Dio positively charged upon the emperor; but Tacitus expresses a doubt concerning its origin, and the probability is, that the fire was accidental. Nero was at Antium when it happened, but returned in time to see the palace in flames. He now opened his gardens, and caused sheds to be erected for the multitudes who were deprived of a home, and took measures to prevent a scarcity, and supply the most pressing wants of the people. The emperor might have gained credit upon the whole by this disaster, had not the suspicion of his being its author still maintained its ground in the minds of the people. The method which he took to divert it has, perhaps, excited greater detestation of his memory than all his other enormities. He caused the Christians to be accused as the incendiaries, and, without trial or inquiry, apprehended all whom he could discover in the city, and put them to death in the most horrible manner. This savage conduct, for which there was not the slightest pretence, has branded him most justly with the title of the first persecutor of the Christian church. In the re-edification of Rome, much attention was paid to order and convenience in the arrangement of streets, &c.; but, of all the new edifices, none could bear comparison with that which Nero constructed for his own residence, and which he denominated the "Golden Palace." This building was not more remarkable for the immense quantity of gold and other precious materials employed in its decoration, than for its

magnitude. Nero, whose taste was entirely turned to the gigantic, and who enjoyed nothing but in proportion to its cost, said, when it was finished, that he now began to be lodged like a man. His profusion of every kind rendered him always needy, and consequently rapacious: he plundered, without shame or remorse, every body, and the temples themselves were not sacred when his wants required their wealth. In the year 65, the people seemed weary of subjection to such a monster, and a conspiracy was formed against him; but it was discovered before the plan was executed, and much of the best blood in Rome was shed on the occasion. From this period Nero became suspicious of every human being, and placed no bounds to his cruelty: he mounted the public theatre at Rome, disputed for the prizes of musician and actor, and inflicted cruel punishments on those who were tardy or careless in their applauses. The death of his wife Poppæa was occasioned by a kick which she received from her husband while in a state of pregnancy. When his passion had subsided, his grief was excessive, of which he gave every demonstration in his power: he caused her body to be embalmed in the Eastern manner, pronounced a funeral oration over her dead body, and burnt more perfumes at her obsequies than the annual produce of Arabia. A long and bloody list of executions, in which the victims were the best and greatest men of Rome, distinguishes the annals of his subsequent years. These sanguinary scenes were contrasted by the splendid ceremonial of Nero's conferring the crown of Armenia on Tiridates, in the presence of the Roman people, in which Oriental servility and Roman pride were equally conspicuous.

The Greeks, about this period, sent a deputation to compliment Nero on his musical attainments, who gave him so favourable an idea of their countrymen, that he determined on a tour into Greece. Carrying with him an immense train of persons attached to his theatrical establishment, he embarked for that country in the year 67, and before he left it solemnly proclaimed Greece free. This favour, as he wished it to be understood, was counterbalanced by the pillages, confiscations, and murders, of which his visit was productive. To perpetuate his name, he undertook a project, often before conceived, but deserted through superstitious motives, *viz.* that of cutting across the isthmus which joins the Peloponnesus to the rest of Greece. The work had proceeded some length, when Nero was hastily recalled by the alarm of new conspiracies. On his return to Italy, he made triumphal entries into several towns, and a very splendid one into Rome, in which he is said to have displayed the most absurd vanity, although tottering on his throne, through the revolts of Vindex in Gaul, and of Galba in Spain. The latter, when he was made acquainted with its extent, particularly alarmed him, and though he was willing to make resistance, yet despair seems from the first to have taken possession of his mind. Of all the reproaches heaped upon him, none made so deep an impression on his mind, as the title of a "paltry and contemptible musician," which Vindex bestowed on him. Upon entering the city, he convened a few of his creatures among the senate, and entertained them with a musical exhibition, instead of consulting them on the means of saving the state.

At length the prætorian cohorts were detached from their allegiance by the persuasions of their prefect, and they proclaimed Galba emperor. Nero fled from Rome, and took refuge in the country-house of one of his freedmen. After his flight was known, he was declared a public enemy by the senate, and condemned to an ignominious end, such as was inflicted only on the vilest malefactors, *viz.* to be dragged



naked through the streets of Rome, and whipped to death; afterwards his body was to be thrown down from the Tarpeian rock. The execution of this sentence he prevented by a voluntary death. He pierced his throat with a poniard, but, being too irresolute effectually to perform the deed, his hand was aided by his secretary. As he was expiring, he begged that his head might not be cut off from his body, and exposed to the populace, but that the whole might be burnt on a funeral pile. This request was granted by one of Galba's freedmen, who performed the obsequies in the usual manner. This was in the 68th year of the Christian era, when he had attained to the age of 32, and after a reign of almost fourteen years. Rome was filled with acclamations at the intelligence. Their vengeance was not only exercised against the statues of the dead tyrant; but his friends were the objects of the public resentment. In him terminated the line of Augustus. Detested as his memory has been in all ages, there were not wanting many in Rome among the people and soldiery, who, having benefited by his prodigality for several years, crowned his tomb with flowers, and cherished his name with fond regret. But such an attachment will not entitle him to credit for virtuous feelings, since it was the offspring of that lavish profusion which is always a vice in princes, and not unfrequently the parent of every other vice. In finishing the character of this emperor, it may be observed, that the name of Nero is even now, and will continue (so long as the facts of Roman history exist) to be used, to express a barbarous and unfeeling oppressor. Pliny calls him the common enemy of mankind, and in this he has been followed by all writers, who exhibit the savage tyrant as a pattern of the most execrable barbarity and unpardonable wantonness. Univer. Hist.

In the 63d year A. C. he mounted the stage himself at Naples as a public singer. This was his first appearance as a strolling minstrel. His second was in Greece, in 66, where, as we have seen, he pretended, in imitation of Flaminius, to restore to the Grecian states their ancient liberties. After entering the lists with common musicians at the Olympic games, and acquiring the prize of music by corrupting the judges or his competitors, he travelled through Greece, not prompted by the laudable curiosity of visiting the antiquities of that once celebrated country, but by the low ambition of displaying his skill in singing and playing upon the cithara. He every where challenged the best performers, and, as may be imagined, was always declared victor. And that there might remain no memorials of other victors, he commanded all their statues to be pulled down, dragged through the streets, and to be either broken in pieces, or thrown into the common sewers.

At his return from Greece, he entered Naples, Antium, Albanum, and Rome, through a breach in the wall of each city, as an Olympic victor, carrying with him in triumph, like spoils of an enemy, the prizes which he had extorted from the judges in musical contests: in the same car in which kings used to be brought in triumph, who had been vanquished by Roman generals, and with the same splendour, pomp, and solemnity, was Diodorus, a celebrated Greek performer on the cithara, with other eminent musicians, brought through the streets of Rome, leaving it doubtful which was the greatest, the vanity of Nero in imagining himself superior to these professed musicians, or their adulation in confessing themselves to have been vanquished by Nero.

The solicitude with which this emperor attended to his voice, as related by historians, is curious, and will throw some light upon the practices of singers in ancient times. Suetonius informs us, that to preserve his voice, he used to lie upon his back, with a thin plate of lead upon his stomach;

took frequent emetics and cathartics; and abstained from all kinds of fruit, and such meats as were thought to be prejudicial to singers; and, at length, from the apprehension of hurting his voice, he ceased to harangue the soldiery or senate, contenting himself with issuing his orders in writing, or by the mouth of some of his friends or freedmen. After his return from Greece, he established about his person a *phonastus*, or officer, to take care of his voice: he would never speak but in the presence of this vocal governor, who was first to admonish him, when he spoke too loud, or strained his voice; and afterwards, if the emperor, transported by some sudden emotion, did not listen to his remonstrances, he was to stop his mouth with a napkin. The most effectual means of acquiring his favour was to commend his voice, which, according to Suetonius, was both thin and husky; to pretend raptures while he sung, and to appear dejected and very importunate, if, like many other singers, through caprice he desisted from doing what he himself most ardently desired.

Encouraged by the applause of the multitude, he appeared almost every day on the stage, inviting not only the senators and knights, but the whole populace and rabble of Rome, to hear him, generally in the theatre which he had built in his own palace. He frequently detained the audience not only the whole day, but the whole night: for till he was tired himself and desisted, no one was on any account suffered to depart; so that women are said to have been delivered in the theatre, and several persons were so tired and disgusted with the performance, that, finding the gates of the palace shut, they either leaped over the walls at the hazard of their lives, or counterfeited death, in order to be carried out to their funeral. Some, by continuing night and day in the same posture, were seized with mortal distempers; these, however, they dreaded less than the resentment of the prince, which they would have unavoidably incurred by their absence. Besides the great number of secret observers employed to watch the countenances and behaviour of the audience, there were many open spies, who publicly set down the names of such as discovered the least symptoms of dissatisfaction: the vulgar were instantly punished by the soldiery for the least inattention; and upon persons of rank, the vengeance of the emperor was vented in a still more dreadful manner. Vespasian, afterwards emperor, greatly provoked the anger of Nero, by escaping from the theatre during the time of performance: however, fearing the consequences of the offence which he had given, he returned, in order to make reparation; but, unfortunately falling asleep while the emperor was singing, this male firen was so enraged at his inattention, that it would have cost him his life, if his friends, men of the highest rank and merit, had not employed their prayers and mediations in his behalf.

**NERONDE**, in *Geography*, a town of France, in the department of the Loire, and chief place of a canton, in the district of Roanne. The place contains 1094, and the canton 8140 inhabitants, on a territory of 170 kilometres, in 10 communes.

**NERONDES**, a town of France, in the department of the Cher, and chief place of a canton, in the district of St. Amand; 17 miles E.S.E. of Bourges. The place contains 1417, and the canton 8265 inhabitants, on a territory of 207½ kilometres, in 13 communes.

**NERPIS**, a town of Sweden, in East Bothnia; 10 miles N. of Christianstad.

**NERSHINSK**. See **NERTCHINSK**.

**NERSTEN**, a town of the duchy of Courland; 18 miles S.S.W. of Saalburg.

**NERTCHA**,



**NERTCHA**, or **NERTSHA**, a river of Russia, which runs into the Amoor, near Nertchinsk.

**NERTCHINSK**, or **NERTSHINSK**, a city of Russia, in the government of Irkutsk, seated on the Nertcha, at its junction with the Amur or Amoor, built in the year 1658, on the borders of China. It took its rise from a fort, and contains, besides some public edifices, 150 houses of mean structure. The Chinese caravans formerly passed through this town, but they have of late taken a different road. However, the Russian envoys are still received and entertained by the Chinese, and those of China are treated in the same manner by the Russians, in this town. The adjacent country, though mountainous, yields excellent pasture for cattle. In the vicinity of this town are considerable mines. N. lat.  $51^{\circ} 12'$ . E. long.  $116^{\circ} 44'$ .

**NERTERIA**, in *Botany*, derived from *νεῖρος*, *inferior*, or *lowly*, in allusion to the humble and prostrate growth of the plant. This genus was sent by Mutis to Linnæus, under the name of *Gomezia*; but the latter, from an error in reading the manuscript, called it, in his *Supplementum*, *Gomozia*. The classical appellation therefore, bestowed on it by Solander and Gærtner, is of course to be preferred. Indeed *Gomezia* would be hardly allowable, since no mention is made of its derivation in the manuscripts of Mutis, nor is any botanist of that name known. The genus is nearly allied to **MANETTIA**. Sm. Plant. Ic. v. 2. t. 28. Willd. Sp. Pl. v. 1. 705. Mart. Mill. Dict. v. 3. (Nertera; Soland. MSS. Gærtn. t. 26. Schreb. 821. *Gomezia*; Mutis. MSS. *Gomozia*; Linn. Suppl. 17. Juss. 198. Lamarck Illustr. t. 87.)—Class and order, *Tetrandria Monogynia*. Nat. Ord. *Rubiaceæ*, Juss.

Gen. Ch. Cal. Perianth none, according to Mutis, except a very small, slightly four-toothed border to the germen. Cor. of one petal, funnel-shaped; tube gradually enlarging, short; limb cloven into four, acute, reflexed segments, shorter than the tube. Stam. Filaments four, equal, inserted at the base of the tube, thread-shaped, nearly erect, the length of the corolla; anthers oblong, two-lobed, erect, yellow. Pist. Germen inferior, oval, slightly compressed, smooth; styles two, adhering at the base, thread-shaped, smooth, as long as the stamens; stigmas acute, reflexed, divaricated. Peric. Berry globose, umbilicated with a small dot at the top, of two cells, succulent, very smooth, red, the size of a pea. Seeds two, oblong, flat on one side, convex on the other.

Ess. Ch. Corolla funnel-shaped, four-cleft, superior. Berry of two cells. Seeds solitary.

t. *N. depressa*. Sm. Plant. Ic. t. 28. Willd. (*Gomozia Granadenis*; Linn. Suppl. 129.)—Mutis observed this plant very frequently in wet and marshy situations at New Granada. It is also a native of New Zealand, according to Forst. Prod. 89. Root fibrous, annual. Stems herbaceous, procumbent, throwing out roots at the joints, branched, leafy, thread-shaped, somewhat angular, smooth. Branches axillary, opposite, erect, single-flowered, short. Leaves opposite, stalked, heart-shaped, roundish, rather obtuse, entire, smooth; those of the stem spreading, those of the branches more erect, or close-pressed; stalks roundish, furrowed above, nearly as long as the leaves. Flowers solitary, at the tops of the branches, sessile, pale-coloured. Bracts two, opposite, acute, very small.

**NERTSHINSKOI MOUNTAINS**, otherwise called the mountains of Daouria, mountains of Russia, which extend from the Baikal and the sources of the Selenga and the Amoor, down the two sides of these rivers; on the one side as far as where the Argoon falls into the Amoor, and on the other side up to the heads of the Niufa and the Oldekou, where

it annexes itself to the spurious range of Okhotz, or Krebet Stanovi. It consequently includes the whole space between the Selenga and the Argoon, takes the same direction with the course of the Amoor and the Ingoda from W. to N.E. and runs down to us from the Mongoley under the name of Yablonoi-Krebet, or Apple-mountain. It has its greatest elevations about the origin of the Amoor and the Ingoda, where it consists of very rugged granite tops, high and steep. Between the course of the Ingoda and the sources of the Khilok and Vitim it is much smaller, notwithstanding which it seems to stand very high. It here forms a ridge, partly uniform in its progress, woody, and well-watered, and consists for the most part of pure crumbled granite. The part of this range enclosed by the Amoor and Argoon is properly called the Nertshinskoi chain of ore-mountains, and is found to be the richest in minerals of any of the mountains hitherto explored in these regions. It produces beautiful kinds of granite, porphyry, jasper, a great quantity of chalcedonies, carnelians, onyx, agate, hornstone, large smoky topazes, aqua marine, hyacinth, and topaz-coloured schorl, genuine topaz and beryl, &c., granites, fine feldspar glandules, serpentine, asbestus, nephrites, chalk-stone, slate, gypsum, excellent river spar; salt-lakes, vitriol-pyrites, alum-ore, native sulphur, coals, warm springs; zinc, iron, copper, and a remarkable quantity of lead-ore, containing silver and gold, of which, since the commencement of the last century, a great many mines have been opened, and of which several are still in full work. These regions also present numerous forests. The trees are pinus sylvestris, larch, birch, firs, cedars, &c. The principal rivers here are the Selenga, the Khilok, the Vitim, the Olekma, the Karenga, the Niufa, the Oldekou, the Onon, the Ingoda, the Amoor, the Argoon, &c. &c. Tooke's View of the Russ. Emp. vol. i.

**NERVA**, **COCCEIUS**, in *Biography*, a Roman emperor, descended from a Cretan family, that had become Roman in the time of Augustus, was born in the year 26 of the Christian era, and being son, grandson, and great-grandson of consuls, entered with great success the career of civil dignities. He was prætor when Nero conferred upon him triumphal honours. He was consul for the first time in the year 71, with the emperor Vespasian, and afterwards with Domitian in 90. The conspirators who had formed their plans for freeing the empire from the tyranny of Domitian applied to Nerva, who was at that time at Rome, to undertake the duties and office of emperor: to this he consented, and was accordingly raised to the imperial purple in the year 96. The prætorian bands had been secured in his favour, and the senate was happy to confirm the elevation of one of their own body, whom they highly respected. He soon rendered himself extremely popular by the mildness of his manners, and by the activity which he exhibited in the management of public affairs. The first cares of his government were to repair the evils of the late tyranny; he abolished the odious law of treason, and recalled the exiles, among whom were some of the most virtuous persons of the age. He restored to the enjoyment of their property those who had been the objects of unjust confiscations, and punished with death the freedmen and slaves whose informations had caused the ruin of their masters. He snuffed no statues to be raised to his own honour, and he applied to the use of the government all the gold and silver statues which had been erected to his predecessor. In himself he was the example as well as the patron of morals and strict virtue. He forbade the mutilation of male children. He made a solemn declaration that no senator should be put to death during his reign, which he observed with such sanctity, that, when two



members of the senate had conspired against his own life, he was satisfied to tell them he was well acquainted with their evil intentions. He also conducted these very men to the public spectacles, and seated himself between them, and when a sword was offered to him according to the usual customs, he desired the conspirators to try it upon his body. Such confidence in the uprightness of his own intentions, and justice of his government, and such reliance upon the consequences of his lenity and indulgence, conciliated the affection of all his subjects. It was the spirit of his administration, so to govern that he might render a good account of his actions, and return without apprehension to a private station. In some instances it must be admitted that his lenity, or perhaps timidity, forced him into disgraceful compliances. One of these was the restoration of licentious pantomimes, which Domitian had abolished, but which the people demanded with tumultuous shouts: another was the giving up the authors of the death of Domitian, who were, in fact, the instruments of his own elevation. It was in vain that he presented his own bare neck to the enraged soldiers, and entreated them rather to satiate their vengeance on himself; he was obliged to consent to the sacrifice, and even to seem to approve it. The mortifying incident, however, was the cause of a great public benefit, for it produced the adoption of Trajan. Made sensible of the necessity of a firm support to the throne, he passed by his own kindred, and selected for his son, and successor, the man, in all the empire, best fitted for the high office. Had this choice been the only act of his reign, it would have entitled him to the remembrance of his subjects. (See *TRAJAN*.) He died in the year 98, after a reign of sixteen months, and at the age of 72. Nerva has been charged with an intemperate love and use of wine, and, perhaps, to have enjoyed the favour of Nero and Domitian may lead to a suspicion of the regularity of his morals, but his public virtues have deservedly placed him in the series of those good princes who have been respected and honoured by posterity. Tacitus speaks of Nerva as being the first person who allied two things before thought to be incompatible, *viz.* monarchy and liberty.

*NERVE*, in *Anatomy* and *Physiology*, is a solid chord of a round or flattened figure, sometimes fibrous; composed of a soft white or medullary substance, and a peculiar membrane; connected either immediately or remotely with the brain, spinal marrow, or certain small bodies called ganglia; and forming the instrument by which external objects act on the brain, by which the latter organ influences the voluntary muscles, and by which the involuntary organs and the brain or ganglia exert whatever influence they may possess on each other. The same term was applied by the older anatomists to the ligaments and tendons. See *NERVOUS System*.

*NERVE, Capillaments of the.* See *CAPILLAMENT*.

*NERVES, Ganglion of the.* See *GANGLION*.

*NERVES Microscopically examined.* Mr. Leeuwenhoek endeavoured by his microscope to discover the structure of the nerves in the spinal marrow of an ox: he saw there with great delight, minute hollow vessels of an inconceivable firmness, invested with their proper membrane, and running out in length parallel to one another, and making up their composition; and though some hundreds of these vessels go to the formation of the least nerve that can be examined, he not only discerned the cavities in them, which he computed to be three times less than their diameters, but in some perceived the orifices as plainly as the holes in a pricked paper are to be seen when looked at against the sun. It requires, however, great dexterity and expedition to make this examination with success; for after a thin slice of the spinal

marrow is placed before the microscope, in less than a minute's time it becomes dry, and the whole appearance vanishes. Baker's *Microscope*, p. 145.

*NERVES*, in *Architecture*, denote the mouldings of projecting arches of vaults, or those arising from the branches of ogives, and crossing each other diagonally in Gothic vaults; serving to separate the pendentives.

*NERVES*, in *Botany*, are long tough strings, running either across, or lengthwise of the leaves of plants.

*NERVI*, in *Geography*, a town of Genoa; five miles E.S.E. of Genoa.

*NERVINES.* See *NEURITICS*.

*NERUKA*, in *Geography*, a port in the island of Cape Breton, where the French had a settlement.

*NERVOSA CORPORA*, in *Anatomy*. See *CAVERNOSA Corpora*.

*NERVOSUM FOLIUM*, in *Botany*, a leaf furnished with more than one longitudinal nerve, or rib; see *COSTA* and *COSTATUM*.

*NERVOUS COLIC.* See *COLIC*.

*NERVOUS Diseases*, are those diseases which appear to arise independently of any organic change of structure, and are, therefore, ascribed to some indefinite derangement of the sensible and irritable powers of the animal frame, of which the brain and *nervous system* are the seat and channels of communication. Hence the epithet *nervous* is applied to all cramps and spasmodic pains, which, in fact, consist of inordinate and involuntary contractions of muscular parts; to all uneasy sensations, especially when they move from part to part, and have no determinate seat; to great depression or remarkable variations of the spirit; and especially to the tremors, fears, and anxieties, which accompany that depression of mind. Now these various symptoms, together with certain partial or general convulsive paroxysms, flatulence, globus hystericus, &c. which are commonly present, in persons of delicate constitution, in different degrees and combinations, when the stomach, or bowels, or the secretion of bile, happen to be disordered, or when some other important viscera are in a state of debility, as the uterus in women, have been mostly classed together under the appellation of *HYSTERIA*, *HYPOCHONDRIASIS*, *INDIGESTION*, &c. under which articles an ample account of their nature and method of cure will be found.

It is worthy of observation, however, that this term, *nervous disease*, ought not to be taken in a literal sense; inasmuch as the nerves are not in fact the seat of any disease in these cases: on the contrary, there is usually some local disorder, most frequently in the organs of digestion, with which these general or *nervous* symptoms are connected. Hence it has been the fashion with some medical men to denominate them, with almost equal impropriety, *bilious diseases*. The treatment, however, which is suggested by the latter appellation, namely, the regulation of the bowels, is useful and proper; while the nervous or *nervine* medicines, as they have been called, which consist chiefly of stimulating and spirituous drugs, although they afford a temporary relief to the sensations of the patient, contribute nothing to the ultimate cure; but, on the contrary, undermine the strength of the constitution, and of the digestive organs in particular, and thus rivet, as it were, in the habit, the very evils which they are expected to cure. The "nervous cordials," and other empirical nostrums, which are sold under various names, are all spirituous liquors, tintured with some grateful aromatic; in other words *medicated drams*, which have not only contributed to injure the health, which they were taken with a view to improve, but also to convert many persons who were sober into dram-drinkers, by seducing them to take, under the



the name of medicine, what they would have been ashamed to swallow if undisguised. Too much caution cannot be recommended, in cases of nervous disorder, against the habitual use of what are called cordials.

**NERVOUS Fever.** See **FEVER**, *Nervous*.

**NERVOUS Fluid, Spirits, or Juices**, hypothetical terms employed by the older pathologists, in order to express the medium of motion and sensation, as supposed to exist in the nervous system. It has been a common and almost universal error among philosophers, when they had traced certain phenomena up to certain material agents, the mode of action of which they were unable to comprehend, to invent some intermediate invisible agent, (generally a spirit, æther, or other fluid,) which they imagined was the organ of communication and connection between the visible agents. Thus the principle of gravitation, of electricity, &c. has been supposed to be an æthereal fluid, the framers of these hypotheses falsely imagining that they had acquired some new knowledge, when they had merely interposed some unmeaning words. A similar hypothetical fluid was resorted to, when the nervous chords and fibres, every where distributed through the animal frame, were discovered to be the channels of communication between the common sensorium and the extreme parts, the messengers of volition to the muscles, and the conveyers of sensation to the brain. We are obliged, from the poverty of language, to use these mechanical terms in speaking of the nervous system. But the mode of communication is peculiar and inferutable; and we are concerned only with the fact. A more accurate anatomy has demonstrated that the nerves are not tubes and hollow canals, and therefore are not calculated for the transmission of any fluid; and a more accurate philosophy has taught us, not to interpose an imaginary agent, where we have no evidence of its existence, and where, if it were present, it could not enable us to understand, or to explain more satisfactorily, the phenomena which we observe. All considerations respecting a nervous fluid are, therefore, justly discarded by modern physiologists and pathologists. See **NERVOUS System**.

**NERVOUS Parts, Consent of the.** See **CONSENT**.

**NERVOUS Spirit, or Juice**, denotes a pure, subtil, volatile humour, better known by the name of *animal spirits*; secreted from the arterious blood in the cortical part of the brain, collected in the medulla oblongata, and thence driven by the force of the heart into the cavities of the nerves; to be conveyed by them throughout the body, for the purposes of sensation and animal motion.

Ghiffon, Wharton, and Willis, first mentioned the nervous juice; but many of our modern physicians deny the existence of this juice. See **ANIMAL Spirits**.

**NERVOUS System**, in *Anatomy and Physiology*. Under this expression are included the organs contained in the cavity of the cranium, or, in common language, the brain; the medulla spinalis; and the nerves, whether of the kind that are connected to either of the two organs just mentioned, or those which are furnished with ganglia. A short account of the structure and functions of these parts is given under the word **BRAIN**: it will be the object of the present article to supply what has not been inserted there concerning the structure and functions of the nervous system, and to give a description of the ramifications of the nerves.

"The use of the senses in making us acquainted with the external world, volition and its effects on the muscles, all the operations of the mind, our instincts, propensities, and passions, and even the distinguishing characters of humanity, depend entirely on the nervous system, so that without it all

nature would be in a manner dead and incapable of enjoyment, because we could not conceive the existence of any perception or idea under such a state. Without the physiology of the nervous system, neither psychology, nor any kind of philosophy can exist. If we consider further, that teachers, moralists, legislators, and judges cannot, without falling into error, overlook the influence of organization on our propensities, passions, talents, and actions, we shall soon be convinced that there can be no object of greater, more general and permanent interest to all the educated classes of society. In animals of complicated organization almost all the functions are more or less influenced by the nerves. Digestion, nutrition, the secretions and excretions, circulation, respiration, &c. are disordered or stopped when the nerves belonging to the different organs are compressed, injured, or divided. If the spinal marrow, or the nerves, which are the conductors of sensation and voluntary motion, are compressed or divided, all motion and sensation ceases in the parts below the injury. A fluid extravasated in the brain, or any kind of pressure on that organ, paralyzes more or less completely the whole body, or the opposite side of the body to that on which the brain has been injured, and extinguishes in various degrees consciousness and the faculty of thinking. The more the influence of the nerves is weakened, the more easily are chemical and physical changes carried on in the body." Gall, *Anat. et Physiol. du Syst. Nerveux*, p. 12.

The brain has been regarded, in all ages, as the material instrument of the sentient and thinking principle; and the nerves are undoubtedly the medium through which the mind and external objects reciprocally influence each other. The anatomist and physiologist have always bestowed on the nervous system a degree of attention proportioned to the importance of the functions which it executes. The brain, in particular, has been their favourite study. By dissecting this part, they have hoped to solve the interesting problem of the connection between our organization and the imaginary immaterial principle supposed to regulate its motions; and to develop the mysteries of sensation and of the various mental operations. Hitherto these expectations have not been realised. The extremely complicated structure of the encephalon has been represented with unrivalled beauty and accuracy, and described most clearly and elegantly by Vicq d'Azyr. His work, which is a splendid monument of the arts, consists entirely of anatomical details. The size, figure, connection, and structure of all parts in the brain, are unfolded with the greatest fidelity; but their uses receive no illustration. The labours of Soemmerring, the most accomplished of modern anatomists, who, like Vicq d'Azyr, has chiefly employed himself in investigating the contents of the cranium, have not been more successful in determining the uses of the different parts of the brain. Undismayed by the repeated failures of their predecessors, two German anatomists, Messrs. Gall and Spurzheim, have applied with increased ardour to this interesting subject. They claim the merit of many new discoveries in the anatomy of the brain; they have founded certain physiological opinions on these; and have even attempted to shew a connection between certain points of structure and the moral and intellectual dispositions of individuals. The first of these gentlemen has attracted much notice of late years by the opinions delivered in his lectures in the principal cities of Europe. (See the article **CRANIOLOGY**.) After confining himself for a long time to the oral promulgation of his doctrines, he at last submitted his alleged discoveries concerning the anatomy of the brain, to the first scientific tribunal in Europe, the French National Institute; and as they involve much intricate anatomical detail, the account was very properly referred, for examination,



amination, by this learned body, to five of their own members, the most distinguished for their proficiency in anatomical science. Gall and Spurzheim dissected the brain in the presence of the commissioners of the National Institute, Messrs. Tenon, Portal, Sabatier, Pinel, and Cuvier, and gave the most ample explanations of their peculiar opinions. The dissections were repeated by these gentlemen, and the result of their investigations is contained in a report, of which an English translation was published in the *Edinburgh Medical and Surgical Journal*, January 1809, under the following title, "Report on a Memoir of Drs. Gall and Spurzheim, relative to the anatomy of the brain, by Messrs. Tenon, Portal, Sabatier, Pinel, and Cuvier, presented to, and adopted by, the class of mathematical and physical sciences of the National Institute." The German anatomists have since published, on the same subject, "*Recherches sur le système nerveux en general, et sur celui du cerveau en particulier; mémoire présenté à l'Institut de France, le 14 Mars, 1808; suivi d'observations sur le rapport qui en a été fait à cette compagnie par ses commissaires, 4to. 1809.*" This work was not designed to contain a development of all Gall's opinions: it is occupied almost entirely with anatomical details. He proposes to deliver the result of all his researches into the structure and functions of the nervous system in all animals, in a large work, with very numerous plates, of which one volume has been already completed, under the title "*Anatomie et physiologie du système nerveux en general, et du cerveau en particulier, avec des observations sur la possibilité de reconnoître plusieurs dispositions intellectuelles et morales de l'homme, et des animaux, par la configuration de leurs têtes. Premier volume, Anat. et physiol. du syst. nerveux en general, et du cerveau en particulier,*" Paris 4to. with atlas in folio. As all these publications are subsequent in date to the time when the article **BRAIN** of this *Cyclopædia* was written, the doctrines delivered in them could not be then noticed.

The opinions of Gall with regard to the structure of the nervous system, and more particularly of the brain, totally change the common ideas and modes of investigating the subject. We should observe here, however, that he does not pretend to have discovered many new facts; the chief merit that he claims, consists in the connection that he has been the first to establish between known facts, and in the general conclusions which he has deduced from them. His doctrines concerning the special functions of different parts of the brain is in many respects new, ingenious, and important. Its intent is to prove, that there are in man and animals innate qualities and dispositions, connected with certain organs situated in the brain; that the brain is not so much the general organ of animal life, as the place in which the individual organs are collected, each innate quality having its special organ: that these organs shew themselves on the surface of the brain, and form eminences marked by corresponding ridges in the cranium; and that, from an observance of these last, we may, under certain limitations, determine the existence of such organs, in a greater or less degree of development, answering to the greater or less degree of energy, in the intellectual or moral disposition with which they are connected. Its merit must rest on the number and importance of the facts which can be brought forwards for its support. We cannot enter on this part of the subject, as the volume which is to contain Gall's detailed account of these matters is not yet before the public.

*Opinions of Gall and Spurzheim concerning the medullary and cortical Substances.*—Of the two substances, which compose the nervous system, commonly called the cortical and medullary, Gall and Spurzheim have taken a view somewhat

different from the common one. They object very strongly to the term medullary, as implying a soft and pulpy texture in what they consider to be essentially fibrous. They regard the cineritious substance as the source or origin of the white or fibrous matter. Their opinions on this subject may be collected from a series of anatomical corollaries appended to the second section of their great work. 1. The whole of the nervous system presents only two substances: one of these is pulpy or gelatinous, and generally grey-coloured, but it may be reddish, yellowish, &c.; the other is white and fibrous: consequently there is no such thing as a medullary matter. 2. The grey gelatinous matter engenders or produces the nervous filaments: it is the matrix of these filaments. Wherever it exists, they are produced; and it exists, wherever they are produced. Whenever a medullary bundle crosses cineritious matter, it is enlarged by filaments received from the latter; and none of these bundles enlarge without the concurrence of this matter, whether it form a sensible enlargement, or only follow and accompany the medullary bundle. 3. The more abundant the gelatinous substance, the more nervous filaments are produced: consequently, the grey matter and the number of nerves are in a direct and reciprocal ratio to each other. 4. No nerve arises from another nerve; but each has its origin in a peculiar mass of gelatinous substance: consequently the nervous systems of the chest and abdomen cannot be derived from each other, nor from the brain, nor the spinal marrow. These anatomists regard the cortical matter as the same on the outside of the cerebrum and cerebellum, in the interior of these organs, and of the medulla spinalis, and in the ganglia and plexuses of nerves. They extend the analogy still farther, and observe that "the cineritious matter, and consequently the ganglia, may be compared to the mucous expansion, which covers all the extremities of the nerves of the skin, of the intestines, and even the pulp of the labyrinth, and the sort of mucous varnish which covers the retina." That the masses of cineritious matter, dispersed in the interior of the encephalon and spinal marrow, possess an identity of properties and functions with that which covers the surface of the cerebrum and cerebellum, is possible, nay perhaps even probable; for the sensible characters of the substances are nearly the same. But we see no direct argument in proof of this point. We should hesitate still more in admitting the comparison between the parts just mentioned and the nervous ganglia. Anatomy detects great differences in their texture; and we are equally ignorant of the properties and functions of both. If we cannot acquiesce in those propositions, what shall we say when the cortical matter of the brain, and the substance of nervous ganglia, are pronounced to be the same in structure and office with the retina and membrane of the labyrinth, with the rete mucosum of the skin, and the lining of the alimentary canal? "Here, it has been justly observed, there can only be with respect to structure, texture, in short, physical nature, a resemblance purely hypothetical. In the absence of proofs derived from direct examination, this comparison could only be justified by some resemblance in the functions and mode of existence during life: but where do these appear?" The function assigned to the cortical matter, as far as we can understand the meaning of the phrases in which it is conveyed, does not seem to differ essentially from the old opinion, which supposes the medulla to be secreted from the cortex. Besides calling the latter the matrix of the medullary fibres, these are said to arise from and to be increased or reinforced (*renforcé*) by the cortical matter. If the origin of the medulla from the cortex mean any thing more than the fact of connection, we ob-



## NERVOUS SYSTEM.

ject to it on the grounds already stated. The notion of one part being produced by the other, is not supported by one fact or argument, and is not more probable, in our opinion, than that the skin should secrete the subjacent cellular substance or muscles. Our observations on the brain, in the early stages of fetal existence, shew that the two substances are coeval, and that the cortex enjoys no priority of formation to the medulla. Why should the latter possess numerous vessels, but for the purposes of its own growth and nutrition? And by what possible stretch of supposition can it be even imagined, that the medullary matter of the nerves in general is secreted, or in any way produced by the cortex?

*General Summary of the Opinions of Gall and Spurzheim.*—The commissioners of the Institute reduced to ten articles what they conceived to be the peculiar views of these anatomists, who acknowledged that they contain a true expression of their doctrine. We extract these as the most certain way to avoid misrepresentation.

“1. The cineritious matter is the matrix of the medullary filaments; wherever it exists, these filaments are produced; it exists, wherever they are produced. Whenever a medullary bundle crosses cineritious matter, it is enlarged by filaments received from the latter; and none of those bundles enlarge without the concurrence of this matter, whether it form a sensible enlargement, or only follow and accompany the medullary bundle.

“2. The spinal marrow is not a bundle of nerves descending from the brain. The spinal nerves arise by filaments, some of which ascend, others descend; this is observed especially in brute animals. The cineritious matter of the internal part of the spinal marrow is the matrix of their filaments; the spinal marrow swells whenever it gives off a pair of nerves; and the more, the larger these nerves are. Thus the spinal marrow of the larger animals, as well as that of insects and worms with red blood, is only a series of ganglia, which give off nerves; but all those ganglia communicate with each other.

“3. The nerves commonly called cerebral, and which arise from the under part of the encephalon, and chiefly from the medulla oblongata, do not come from the brain any more than the others: on the contrary, when we follow separately the roots of each of them into the substance of the medulla oblongata, we see that they re-ascend from the medulla towards the point where they appear externally, and that they do not descend from the brain, to pass through the medulla oblongata.

“4. The brain and cerebellum are themselves only developments of bundles, which have come from the medulla oblongata in the same manner as the nerves proceed from it. The brain, in particular, arises principally from the bundles called pyramidal eminences, which cross each other in passing out of the medulla oblongata, each going to the opposite side to that from which it comes. They swell out first in crossing the pons Varolii, again in passing through the tubercles called thalami optici, and a third time in the corpora striata; always from the addition of medullary filaments, which the cineritious matter, contained in these three parts, adds to those they originally consisted of. The cerebellum comes from bundles called processus cerebelli ad medullam, or corpora retiformia, which receive an addition of filaments once only from the cineritious matter of what is called the corpus ciliare.

“5. Each of these two pairs of bundles, after receiving the additions just described, and having consequently assumed a diverging direction, terminates in two large expansions, covered externally by cineritious matter, which only here deserves the name of cortical substance; and these

expansions, folded in various ways, form what are called the hemispheres of the brain, the lobes, and the vermiform processes of the cerebellum.

“6. From the whole extent of these expansions other medullary filaments are produced, which converge from the two sides of the brain and cerebellum towards the middle line, where the filaments of one side unite with those of the other, and form what are called the commissures. The corpus callosum, the fornix and its appendages, form the largest of the commissures of the brain; the anterior commissure is that which joins the middle lobes. The commissure of the cerebellum is composed of the transverse layers of the pons Varolii.

“7. When we remove or lacerate the converging fibres which go to the corpus callosum, and which serve as ceiling to the lateral ventricles, there only remains, under the cineritious substance, a medullary part, lining it, and following all its folds. Each convolution of the brain and cerebellum, instead of forming a solid mass, as anatomists have hitherto supposed, contains in its middle a solution of continuity; and, by employing proper care, we may unfold this portion of the medulla, as we might unfold the cineritious substance, if it were alone. In a word, each convolution is a kind of small purse or canal, closed externally by a double layer of cineritious and medullary matter, and towards the ventricle by the converging medullary fibres.

“8. As the pairs of bundles forming the brain and cerebellum have their commissures, those which form the nerves have often theirs also, which may very easily be demonstrated in the second, fourth, fifth, and seventh pairs, and very probably in the others.

“9. The ganglia spread over the whole body are small masses of cineritious matter, which certain nerves pass through, and by which they are strengthened, as the pedunculi of the brain are increased in the thalami optici and corpora striata. These two pairs of tubercles, then, are true ganglia to these pedunculi. The cineritious matter of the cortical part of the brain and cerebellum may likewise be regarded as a ganglion of the commissures or converging fibres. That of the inner part of the spinal marrow forms, in like manner, the primary ganglia of the spinal nerves. The cerebral nerves have probably each of them a particular ganglion, and it is easy to demonstrate it in several of them. The cineritious matter, and consequently the ganglia, may therefore be compared to the mucous expansion, which covers all the extremities of the nerves of the skin, of the intestines, and even the pulp of the labyrinth, and the sort of mucous varnish which covers the retina.

“10. From these nine articles, all merely anatomical, all more or less susceptible of being verified, a tenth results, which completes and is the essential character of the doctrine of Gall and Spurzheim; viz. that each pair of nerves forms a particular system; that all these systems communicate together, and reunite in the great chord of the medulla oblongata and spinal marrow; and, lastly, that the brain and cerebellum, far from being the origin and source of this chord, are, on the contrary, an appendix or sort of diverticulum, reserved for certain functions, but receiving an influence from all the parts of the chord, and exercising one upon them by means of their communications.” *Edin. Med. and Surg. Journal*, vol. v. p. 43—45.”

The notions entertained by these anatomists on the nervous system in general, are at variance with those commonly received; and more particularly with the common opinions concerning the identity of origin and action of all the nerves. “We believe, say they, that this system is composed of several particular systems, differing from each other in their intimate



## NERVOUS SYSTEM.

intimate structure, as well as in their respective functions: that the functions or faculties are in a direct ratio to the development of the organs to which they belong; and that the various apparatuses have more or less connection with each other, and consequently reciprocal influence. We have taken care to distinguish the properties common to all the systems from the specific functions of each: as we know that feeling is an attribute of all the nerves, and sensation of all the senses, although the sensation of sound belongs exclusively to the ear, &c. What would be the condition of the naturalist, who should confine himself to investigating the general properties of the physical world, such as gravity, crystallisation, &c. without endeavouring to comprehend the relations and differences of each kind of objects? It is only by subjecting the nervous systems to a more scrupulous and particular examination, than had been hitherto undertaken, that we flatter ourselves with having made a very important step in anatomy and physiology. Without confining ourselves to the nervous systems of the thorax and abdomen, the spinal marrow, medulla oblongata, and brain in general, we find that the brain itself is made up of as many particular systems, as it exercises distinct functions; in the same way the senses are distributed into as many apparatuses or perfect systems, as there are essentially distinct sensations." *Recherches*, p. 229.

*Their Opinion about the Sympathetic Nerve.*—They begin their view of the nervous system, with the examination of the intercostal or great sympathetic nerve, because, in the more perfect classes of animals, the ganglions and plexuses of the abdomen and thorax may be considered as forming the system of an inferior order of functions. Their notions on the origins of this nerve will wear no appearance of novelty to such as are acquainted with the writings of later physiologists. The opinion, which regarded the brain as the origin and point of departure of all the nerves of the body, either immediately, or by means of the spinal marrow, has been gradually departed from, in proportion as a better acquaintance with comparative anatomy, and a more accurate mode of reasoning in physiology, have shewn its inconsistency. Many anatomists have remarked, in particular, the impropriety of deriving the great sympathetic nerve from the brain, and have considered the ganglions as so many separate origins of it. Bichat has entered more at large on the same subject, and in establishing the ganglions as so many nervous centres, possessing each an independent action or influence, exerted on the nervous filaments passing from them to different parts, has given us occasion to admire the clearness of his conceptions, and the expressive language by which his theory is at once supported and adorned. To strengthen these opinions, our authors remark, that in ascending through a scale of animated beings from below "after the zoophytes, all animals properly so called have an intestinal canal, and a heart, or at least distinct vessels. Here we see the gelatinous substance collected into particular masses, and nervous filaments arising in them, and expanded over the different parts of the body; these collections and filaments are more or less numerous, according to the number of the viscera. Sometimes there are only two or three. In the cuttlefish, the nerves of the abdominal viscera, feet, &c. arise each from a particular collection of gelatinous substances. These nervous systems, in animals of a lower order, are analogous to the corresponding parts in those of the higher classes; in fact they are the nervous plexuses of the abdomen and chest, and the more or less interrupted series of ganglia of the sympathetic nerve. As these nervous apparatuses exist already in certain animals, which have no spinal marrow or brain, the question whether they arise from

that marrow, or from the supposed cerebral nerves, is decided. Hence Winflow, Soemmerring, Cuvier, &c., and particularly Bichat, judged very correctly, when they regarded the nervous filaments, connecting these systems to the nerves of the brain and spinal marrow, as simple branches of communication. When the lower systems exist alone, they act in an insulated manner; but as soon as several organs are found in one individual, they must have a reciprocal influence, established by branches of communication: to accomplish this, nervous filaments pass from one system to another, and form a net-work of communications. Thus the plexuses of the viscera first communicate with each other, then with the other systems of the sympathetic nerve, and, by means of the latter, with the spinal marrow and some cerebral nerves. It follows from these considerations, that the nervous systems of the thoracic and abdominal viscera cannot all execute the same functions, and, consequently, ought not to be compared to a net-work. They are rather composed of as many particular systems, each exercising a different function, as there are different origins of nerves; consequently, the sympathetic nerve cannot be regarded as a single pair." *Anat. et Physiol. du Syst. Nerveux*, sect. 1.

Towards the conclusion of this section, the authors give us the following statement of their opinions, on the nature and use of the ganglions. This we have extracted as expressive of their opinions, on the origin of the nervous or medullary fibres, a very leading and important part of their doctrines. "We have observed, in the lower classes of animals, two substances composing the nervous system; the greyish gelatinous matter, and the nervous filaments. The former seems to compose the polypi almost entirely, and to characterise the commencement of the animal kingdom, although nervous filaments have not yet been demonstrated in these creatures. In the next step, the viscera are provided with particular collections of the gelatinous substance, and we can plainly perceive the nervous filaments arising in them; the latter are distributed in their respective organs. As these collections of gelatinous substance form knots or swellings with the nerves that arise from them, they are called ganglia. The larger the collections, the larger and more numerous are the nervous filaments. We do not see the latter arising immediately from the lymph, nor by a transformation of vessels; but they are produced wherever there is gelatinous substance. We ascribe, therefore, the origin and nutrition of the white filaments to the latter. As similar arrangements are found in the plexuses and ganglia of the higher orders of animals, we must equally regard them as the origin of the nerves. They are always interwoven with numerous vessels, and contain throughout an abundance of a reddish-grey, gelatinous, pulpy, unctuous substance. They contain more or less cellular tissue, and are softer or firmer in proportion to the structure of the coverings of the nervous filaments. Often the gelatinous substance is dispersed in a loose cellular tissue, so that the nerves going from it form a kind of plexus. Sometimes it is collected into small masses in these plexuses; between which and the ganglia there is no essential difference. The distinctions of number, form, consistence, and colour, observed in the different species of animals, or in different individuals, are not essential conditions, influencing the uses of the organs; they are merely modifications of structure." *Ibid.* p. 44, 45.

*The Spinal Marrow.*—The common language, in which the spinal marrow is spoken of as a prolongation, or continuation of the medullary substance of the brain and cerebellum, and the common opinion, which regards this organ as a dependence of the encephalon, are entirely rejected by Gall and Spurzheim. The acephalous monsters shew, that



## NERVOUS SYSTEM.

it is formed and exists independently; and they endeavour to prove by comparative anatomy, that it is a series of ganglia, closely approximated, giving origin to the spinal nerves, as the ganglia of the chest and abdomen produce the respective nerves of those parts. Further particulars of their opinions on this subject will be given in our description of the spinal marrow, prefixed to that of the spinal nerves.

*Nerves of the Head.*—The part immediately above the spinal marrow increases considerably in size, as soon as it enters the great occipital foramen; and this increase is more particularly distinct in the mammalia, because most of the nervous systems arising at this point are much larger than in man. It has generally been regarded as a continuation of the white substance of the cerebrum, cerebellum, and tuberculum annulare, and, therefore, named medulla oblongata, the inferior edge of the tuberculum being considered as its superior boundary. Other anatomists comprise under the medulla oblongata, the pons, crura cerebri and cerebelli, corpora striata, and optic thalami. These anatomists refer the origins of all the nerves to the medulla oblongata, including under that term parts really belonging to the cerebrum: Soemmerring conceives, that all the nerves arise from the medulla of the brain; and derives them from the sides of the ventricles. All the proofs, say Gall and Spurzheim, that we have employed to shew that the medulla spinalis and oblongata are not prolongations of the brain and cerebellum, may be applied to the latter part in particular. They will also serve to refute the opinion, that the nerves called cerebral have their origins in the brain. They bear no proportion to the brain, which they would do, if they arose from it. In the calf, the pig, the horse, &c. they are generally much larger than in man, though the brain of these animals is much smaller than ours. These nerves, (called by Gall nerves of the head,) as well as the parts from which they arise, are found in acephalous fœtuses, which have not originally possessed any brain; lastly, their direction from below upwards, or towards the openings, by which they go out of the cranium, proves manifestly, that they cannot be regarded as prolongations of the nervous substance of the brain. We must, on the contrary, consider them as nervous systems, not found in animals of a lower order, as not formed until after the systems of the sympathetic nerve and medulla spinalis, and as destined to the immediate functions of the senses, as well as to the organs of motion, and their accessory organs. *Anat. et Physiol. du Syst. Nerveux*, p. 95.

These anatomists refer to this part the first visible origins of most of the nerves of the senses, of the fifth, sixth, and seventh pairs, as well as of the cerebrum and cerebellum. It has, in common with the medulla spinalis, (see our description of that organ in a subsequent part of this article,) the anterior and posterior fissures, the commissure or transverse layer of union, the internal stratum of cineritious substance, and the canals that are demonstrable by inflation. Although it cannot be regarded as a continuation of the spinal marrow, its particular nervous systems have an immediate connection, by communicating chords, with the nervous systems of the vertebral columns.

In the sympathetic and spinal systems, the nerves are detached, at their very origins, from the common mass; but here the nervous filaments are collected into fasciculi, which continue united to the mass for a longer or shorter extent. We must, therefore, be careful not to confound the point of origin with that of departure from the mass. As long as a nervous bundle remains connected to the mass, it is continually receiving augmentation from the cineritious matter contained in it. Frequently the latter is collected into a

ganglion, in order still farther to reinforce the nervous fibres. How far these gentlemen have been successful in their endeavours to trace all the nerves commonly called cerebral to the medulla oblongata, will appear in our descriptions of the origins of the nerves. We may state here, that they prove tolerably clearly, that the olfactory is the only one that can with any probability be derived from the brain.

In the conclusion of this section, they observe, that all these nervous systems originate in cineritious substance, and by no means in what is called the medullary matter of the brain. That they are not perfect in the first instance, but strengthened and completed in their course. They are sometimes accompanied throughout by cineritious matter, as in the case of the olfactory nerve, and thus go on constantly increasing. Sometimes they meet in their course with collections of grey matter, either in flattened strata, as above the decussation of the optic nerves, or in the form of ganglia, as the tubercula quadrigemina, corpora geniculata, &c. In both cases, the grey substance produces new nervous filaments, and the latter unite to what existed before, until each system is perfected. The ganglions and plexuses of these systems are also to be considered as the source of new systems, or as apparatuses designed to strengthen them. The peripheral extremities of the nerves are not naked in the external organs of their functions; but are all covered with mucous substance of various colours. Of this kind is the mucous substance between the muscular fibres; the corpus mucosum of the skin; the pulpy substance in the nervous papillæ of the tongue; the mucous membrane of the nose; the soft covering of the retina and the labyrinth.

Gall and Spurzheim are very earnest in their objections to an opinion, entertained by most modern physiologists, that the nerves are all originally alike, and that the differences of their functions arise from the external organs connected with them. As a polype may be divided into several pieces, of which each may become an animal like the original one, we may infer that all the parts of the polype are perfectly alike. But it was an instance of bad logic to apply this conclusion, drawn from animals in whom no nerves have yet been discovered, to the complicated nervous systems of the more perfect animals. "Since it has been proved, that the different nerves are not derived from one source, from a common trunk, the opinion of their action being the same in all cannot be supported by any anatomical demonstration. There is a striking difference between the soft and whitish-red nerves of the great sympathetic system, and the hard white spinal nerves; again, the delicate fibres of the cerebrum and cerebellum are distinguished by their whiteness and softness, from those of the vertebral column. The different nerves of the senses bear no resemblance to each other in colour, consistence, form, and texture. Often the different filaments of the same nerve are visibly dissimilar. Not only the different nervous systems, but also the filaments of the same nerve arise from different collections of the grey substance. The ganglions of the different systems are more or less numerous, according as their form, consistence, colour, and texture, vary. All these points are the same in the same nerves; they must, therefore, arise from some original difference of internal structure, and be necessarily connected with the diversity of functions. Physiological principles support the anatomical facts, on which the differences of the nerves are grounded. It is allowed, that the external organs communicate different irritations to the nerves; but, if all these are of one nature, how comes it to pass, that the different impressions of their peripheral extremities are transmitted to the brain unaltered. Should not the impressions of the optic be transported differently from those of the



auditory or olfactory nerve?" *Anat. et Physiol. du Syst. Nerveux*, sect. 5.

We must observe, that this fact of the differences in structure of the particular nerves, has been already stated by Soemmerring and Bichat.

After a short physiological account of the different senses, Gall presents us with the following general observations relative to all the nerves of sense.

*Anatomical Positions.*—1. Each nerve of sense has its peculiar origin. None arises from the brain, nor from any other nerve; but the filaments of each are produced from peculiar collections of grey substance.

2. Each differs from all others in size, structure, colour, and consistence.

3. The apparatuses of the same nerve are more or less numerous and complicated in the different kinds of animals.

4. There is no direct or constantly uniform proportion between the size of the brain and that of the nerves.

5. There is no determined proportion between the nerves of the senses in the different species of animals, nor in the individuals of the same species. Sometimes one, sometimes another nerve is the most developed.

6. The nerves of the senses cannot be said to be larger or smaller in the female than in the male.

7. They are developed and decay at very different epochs in the different kinds of animals, and in individuals of the same kind.

8. Hitherto we know of no decussation in the nerves of the senses, excepting the optic, and this does not exist in all animals.

9. The corresponding nerves of the two sides (*les nerfs congénères des sens de chaque côté*) communicate together by their commissures, and with the neighbouring parts of the brain by communicating branches.

*Physiological Positions.*—1. The functions of the senses can only be executed by material instruments (*ne sont rendues possibles que par des instrumens matériels*).

2. The nerves of the senses are only employed in communicating the impressions of the external world to the brain, that it may modify them.

3. Each is capable of receiving only certain impressions: and the function of no sense can be executed by another nerve of sense.

4. The power (*faculté*) of each sense, in respect to its acuteness (*sensibilité*), is, in the ordinary state, in a direct ratio to the perfection and development of the apparatuses, and probably to the greater or smaller number of them.

5. The particular functions have not the same degree of energy in the different species of animals, nor in the different individuals of the same species; acuteness of sight may be combined with dull hearing, &c.

6. The nervous systems of the senses, like others, may acquire unusual activity from extraordinary irritation, as in fever, inflammations, &c.

7. When the functions of the senses are deranged from injury of the brain, as in paralysis arising from lesions of the spinal system, the effect does not take place on the opposite side of the body.

8. The powers of the different senses are manifested at different periods, according to the development of their organs. From what cause, and for what end are some animals born with the senses fully developed, or at least with the ears and eyes open, while others have them shut? This distinction does not always bear a relation to the power of using the extremities more early; for the newly-born child is as incapable of locomotion as the dog.

9. All the functions of the senses are gradually weakened

in old age. We cannot ascribe this to the effects of habit, nor consider it analogous to our want of consciousness of what passes in the organic life. Nature seems to have purposely deprived us of the power of perceiving the automatic processes; and to have accomplished this end by the slenderness of the communicating threads, which connect the thoracic and abdominal nervous systems to those of the spine, senses, and brain. The functions of the senses are weakened in old age, because the organs are changed in structure, and the nerves are diminished in size. But the change is not simultaneous in the whole system, so that the functions are gradually extinguished.

10. The double organs of each sense do not interfere with the singleness of the sensation; as our consciousness is simple although the organs of sense are five in number.

Impressions, whether derived from the external world through the medium of the senses, or from the interior of our bodies by the general organs of feeling, are to be regarded as indispensable conditions, without which no perception nor thought can take place. But no impression from without, nor any irritation from within, can become a sensation or idea without the concurrence of the brain. The power of perceiving impressions, of retaining and comparing ideas, bears no relation to the senses in man or animals, as is proved by idiots. Consequently, if it should be proved, that man has the most perfect senses of all animals, it would by no means explain, why he surpasses them all in intellectual faculties. Hence Condillac has been obliged to acknowledge "that the senses are not sufficient to acquaint us with the objects in nature, since the same senses are common to us all, though we have not all the same knowledge." The author of the treatise on the senses is therefore wrong in the following passage: "Tous les sens ont de même enfanté des arts pour se satisfaire, ou se perfectionner, ou se garantir des impressions fâcheuses. Quels arts n'a pas produit le sens du toucher? Ces habits, ces palais, ces voitures commodés sont les enfans de sa délicatesse." *Le Cat*, p. 39. Helvetius has a much more judicious observation on this subject. "L'expérience ne démontre point que l'esprit soit toujours en nous proportionné à la finesse plus ou moins grande de ces mêmes sens. Les femmes, par exemple, dont la peau plus délicate que celle des hommes, leur donne plus de finesse dans le sens du toucher, n'ont pas plus d'esprit qu'un Voltaire, &c. Homère et Milton furent aveugles de bonne heure, cependant quelle imagination plus forte et plus brillante! Parmi ceux dont le sens de l'ouïe est le plus fin, en est-il de supérieurs aux St. Lambert, aux Saurin, aux Nivernois, &c. Ceux dont le sens du goût et de l'odorat sont les plus exquis, ont ils plus de génie que Diderot, Rousseau, Marmontel, Duclos, &c. ? De quelle manière qu'on interroge l'expérience, elle répond toujours que la plus ou moins grande supériorité des esprits est indépendante de la plus ou moins grande perfection des organes des sens." *De l'Homme*, &c. t. i. p. 185.

Bacon, Locke, Hume, Helvetius, Condillac found themselves obliged, in order to comprehend, in some degree, the possibility of the functions of the understanding, to have recourse not only to the senses, which some of these authors had so much exalted, but also to a knowledge of the relations of the sensations, or to attention, or experience, reflection, induction. Although they often very much contradicted themselves, they were aware that none of the faculties, which we have enumerated, could belong to any of the senses. But if no faculty in this life can be exerted without a material condition, as we shall afterwards prove most incontestably, we must necessarily suppose the existence of some material organisation for the exercise of the intel-

lectual



lectual powers. At all times a high degree of importance has been attached to the researches concerning the organs by which man and the animals receive the material impressions of the external world. Will it be a less noble or less interesting task to attempt discovering the organs of the higher faculties of the mind? We ask whether the five senses, and the properties, of which we have just spoken, are sufficient to explain the various propensities, and the different instinctive industries of animals, as well as the propensities and faculties of man? How shall we be able to explain on this principle, why the seal, the chamois, and the wild goose place sentinels to alarm them in case of danger? Why birds, the beaver, the rabbit, the ant, construct their abodes with such admirable artifice? Why the quail and the stork emigrate, and return to the same places? Who will explain the attachment of females to their offspring, and the carelessness of the males; while in other species the males participate in this charge with the females? Why the crows are so strongly inclined to live in society, and the magpies alone? Why the cock and the bull are so jealous of their exclusive rights, the hen and the cow so impartial in distributing their favours? Who will shew us the meaning of what we call acuteness, courage, pride, rectitude, &c.? Is it experience? But all these sentiments precede experience: the spider spins, the beaver builds, before they have experience. Is it attention, reflection, induction? Why then does each species bestow attention on a particular object? Why do all individuals of the same species fix on the same object? Why is it even out of the power of man in many cases to bestow great attention, or exercise highly the faculty of induction on certain objects? Must we not perceive, that it is almost the same case throughout nature, as in the example of the monkey, who is careful to fill his cheeks with fruits, but does not know how to keep up a fire?" *Anat. et Physiol. du Syst. Nerveux. sect. 6.*

*The Brain.*—Gall and Spurzheim regard the brain as an assemblage of "nervous systems, which, at least in the more perfect animals, are the particular organs of consciousness (conscience), instinctive industries, propensities, faculties of the mind and soul. Consequently the brain, like any other system, is a particular and independent system, in a state of communication with, and of reciprocal action and re-action on, the other nervous systems, either immediately, or through the medium of communicating branches. It no more arises from the nervous mass of the spine, than that does from it. As we sometimes find the spinal system without a brain, so it is possible for the brain to exist without spinal marrow. This must have been the case with the child born with a second head placed in an inverted position on the natural one. All the arguments against the common opinion concerning the origin of the nerves of the senses, the medulla oblongata, and spinalis from the brain, militate equally against deriving the brain from the spinal system." (*Ibid. sect. 7.*) They proceed to shew, that the brain, like other parts of the nervous system, is made up of the two substances already specified; the cineritious matter, and the nervous fibres. The details of their anatomical descriptions will be given in a subsequent part of this article.

"If we admit, say they, all the gross ideas that have been formed of the brain; that it is the source of all the nerves, and composed of all their extremities; how can we ascribe to it any other functions than those which belong to the nerves of the senses, of motion, and of the organs of nutrition? Since it will present merely an union of the cerebral extremities of all these nerves." *Recherches, p. 230.*

"The history of opinions concerning the functions of the

brain presents us only with a succession of errors. Many of the notions did not even ascribe to it the operations of the mind. What connection could subsist between a spongy substance or mass of impure humours, and the spiritual faculties? To the end of the 16th and even in great part of the 17th century, anatomists still adhered faithfully to the old doctrine of Galen respecting the vital spirits secreted in the cavities of the brain, and distributed to its various parts by the arteries. Such were the notions of Berengiar, Spigelius, Vesling, Willis, Vieussens, and most physiologists. After the beautiful discoveries of the lymphatic system and the structure of glands, an analogy of organisation was fancied to exist between the brain and glands; and similar functions were assigned to them. A nervous fluid was then sought for, instead of vital spirits. Glisson even fancied, that he had seen this fluid distinctly transude from injured nerves. Malpighi thought the cortical substance like a collection of small oval glands. Pacchioni, Baglivi, Lancisi, F. Hoffman, Boerhaave, &c. defended the nervous fluid. The organisation of the nerves was a point not less disputed: whether they are hollow or solid; whether they act by vibration or oscillation, &c. The seat of the soul was equally the subject of different opinions. For a long time it was conceived to be generally expanded through the body, and to reside principally in the nervous system at large: but this notion being at variance with the dogmas of the metaphysicians, the seat of the soul was confined to the brain, and even to some single point of the organ."—"The metaphysicians believed in the simplicity of thought, and consequently held that the organ of the soul must be single: with such views it was useless to inquire into the functions of parts of the brain, or to investigate the organs of particular faculties of the soul. They ought to have looked to anatomists and physiologists for proofs in support of their principles; instead of which the latter allowed the metaphysicians to dictate laws to them. Already there were isolated facts favouring the plurality of organs for the functions of the soul, but no means of rectifying them, or demonstrating their existence in the organisation itself; and the unity of consciousness formed an objection to this plurality. The multiplicity of the vital organs, and of those of the senses, which does not diminish the unity of life or consciousness, ought to have shewn that the want of power to explain a phenomenon does not destroy either the phenomenon or its cause. Philosophers were very unwilling to make the superior functions of the soul, such as thought, understanding, judgment, reason, imagination depend on material organs. The examples of idiots, cretins, hydrocephalic patients, the deranged, and injuries of the brain, were lost on these men. They willingly set down several intellectual faculties in animals, such as memory, which they could no longer dispute the existence of, as merely mechanical faculties."—"Instead of simply endeavouring to collect a sufficient number of phenomena, they gave themselves up to philosophical subtleties with the view of finding hypotheses and explanations. They endeavoured to discover how the body and soul were united; whether immediately, or by the intervention of some substance. Even the nature of this substance, half body and half soul, was examined. Inquiries were instituted into the reciprocal action of the mind and body, the brain and nerves; whether sensations and ideas are the result of impressions on the brain; whether vestiges of these are left behind, how they are renewed, &c." *Anat. et Physiol. du Syst. Nerveux. Introduction.*

The insufficiency or absurdity of most of the notions that have hitherto prevailed concerning the physiology of the



nervous system, must make any extensive researches into its structure and functions peculiarly acceptable: we should receive with pleasure even an imperfect attempt to explain them, if it were grounded, like that of Gall, on actual observation. He has examined the anatomical structure most minutely in man and the various animals: he has attended to the organisation of individuals, as connected with their talents, and has collected facts in the great establishments for education, in the hospitals for foundlings and idiots, in the houses of correction and in prisons, in courts of justice, and at the scaffold. We regret that the physiological part of his labours is not yet before the public: we shall present however some extracts to enable our readers to form a judgment on the kind of views which he takes of these most interesting subjects. And we confess, that so far as the anatomical descriptions go, they seem to us to possess a very decided advantage, in their clear exhibition of the organisation and relative connections of the organs composing the encephalon, to the ordinary unsatisfactory exhibitions of horizontal sections and thin slices of the cerebral mass. It will be seen, however, from the following passage, that Gall does not pretend to derive his physiology of the brain from merely anatomical principles: he rests on observation of phenomena in animals and men for the former, as on the use of the knife in the dead body for the latter. "There are few instances in which the structure of parts, as that of the bones, ligaments, &c. displays to the anatomist the functions depending on it: and when this happens, the ideas are only conjectural. The form of the muscles does not shew us that they possess the power of contraction; and we only know this after seeing the motion they produce. There are neither muscles nor levers in the brain and different nervous systems; we can discern no excretory tubes, no extension, no relaxation, no oscillation, no refraction of luminous rays, no liquid in motion. If the medullary fibres exhibit various degrees of consistence and whiteness, various directions, &c. we could scarcely conceive the possibility of differences in the intimate nature and functions of these innumerable fibres, if we did not reflect that the millions of fibres of similar appearance in animals and in vegetables, are nevertheless proved to differ from each other by the diversity of their effects. Even if we saw any change in the arrangement of the elementary parts, what could we infer? To what conclusions would a knowledge of the structure of the eye and ear lead us, were not these organs connected with nerves, which alone are susceptible of impressions from light and sound in a manner altogether incomprehensible to us? Would the most acute observer have been able à priori to ascribe the power of smelling to the pituitary membrane, and the perception of tastes to the nervous papillæ of the tongue? Generally the knowledge of functions has preceded that of the organs: that the power of vision resides in the eye was known before its mechanism or the optic nerve was understood. Indeed, for a long time the nerves were not supposed necessary to the functions of the senses, because it was believed that the blood-vessels carried impressions to the heart, the imagined seat of the soul. In the same way most of our own physiological discoveries have been independent of anatomical investigations. If we suppose a knowledge of organisation to precede that of functions, it could at best only give rise to conjectures, that would have borne the marks of the prejudices of the time. Thus the heart was formerly made the seat of courage, love, sympathy, cruelty; the liver of anger and sensuality; and in modern times intellectual and moral qualities have been supposed to result from the mixture of humours or temperaments, and the passions to reside in the abdomen, about the solar plexus. If ana-

tomy were a sure guide to the uses of parts, would Willis have imagined that the vital spirits concerned in motion were secreted in the cerebellum? Would Galen have placed the organ of smelling in the anterior ventricles? Would the soul, after being successively dislodged from the pineal gland, corpus callosum, tuberculum annulare, &c. have been seated by Soemmerring in the fluid of the ventricles, and by Ackermann in the medullary substance lining these cavities? Would a thousand other errors have been committed, such as placing memory in the cortical matter, judgment in the medullary substance of the hemispheres? &c.

It might have been expected that anatomists, seeing the great variety of parts in the brain, would have been the first to deduce from this circumstance the diversity, and consequently the plurality of organs for the intellectual and moral qualities. But when we see Vicq d'Azyr, after gradually composing the human brain by ascending from the insect to man, and decomposing it by the opposite course, still acknowledging a single organ of the soul, we find how insufficient the mere knowledge of the mechanical arrangement is to enlighten the physiologist and philosopher. It is only by attending closely to natural phenomena, without paying any regard to metaphysical dogmas, that we can arrive at juster notions concerning the structure of the brain, than most anatomists themselves have been able to form, even by the aid of the minutest dissection. Herder, struck by the intellectual phenomena of various animals and individuals, conceives the idea of a plurality of intellectual organs, and even the hope of being able to discover them by an attentive comparison of the brains and the various qualities. Bonnet regards the brain as a collection of fibres, each having a particular function, and looks to the possibility of discovering these functions.

We have been employed, for many years, in collecting anatomical and physiological facts, before we formed any reasonable induction concerning the nature of the brain and nervous system. But this collection would have been of no use to us, had we not previously supposed a close and necessary connection of them with their material conditions. When thus prepared in physiology and pathology, we soon made discoveries, which the scalpel alone would never have unfolded. If we have gained an anatomy of the brain, which time cannot overturn, we owe it, almost entirely to our physiological and pathological conceptions; and it is the perfect accordance of the intellectual phenomena with the material conditions of their existence, that assures to us the permanence of our anatomical and physiological doctrine of the brain and nerves.

To say that the functions of the brain have been discovered, independently of the knowledge of its structure, is very different from asserting that the functions have no immediate and necessary connection with the structure. Would any one advance, for example, that motion and secretion have no connection with the organisation of the muscles and viscera, and that digestion and circulation are not inseparably connected with the stomach and heart? Can we fail to refer the teeth and claws to the wants and instinct of animals? Is it to be believed that the hand of man has no relation to his brain, or the foot of the horse to his? Have the organs of the senses no necessary and immediate influence on the functions which depend on them? Are we to make an exception for the functions of the brain only, because its organisation and faculties are different from those of the senses and of the organs of organic life? We should then ask if seeing is not altogether different from smelling and hearing, and if seeing, smelling and hearing are not different from moving, digesting, &c.? If it should be answered that all these



## NERVOUS SYSTEM.

these phenomena require only one general vital principle, we shall then inquire how this one principle produces contraction in the muscles, secretion of bile in the liver, sets the heart in motion, and presides over the sensations of taste and smelling?

If the diversity of function in the senses be explained by the variety of the external organs, and the different parts of the brain be alleged to have no difference in function because they have no such external organs, we ask what becomes of the external organ when deprived of the partial internal ones? Is vision kept up after the paralysis or atrophy of the optic nerve? Whence come the sentiments and ideas that agitate a man in a dream, or when he is remembering what is past? Since, then, all the nervous systems exercise their functions in the interior of the organisation, why should the faculties of the brain be excited and limited by the senses and external objects? What senses give us the notions of benevolence and vengeance, love and hatred, pride, duty, justice, art and science? The dog and monkey have the same senses as man; are they therefore in the same rank with him, in moral and intellectual qualities?

In vain do we attempt to explain the superiority of man, by a higher degree of nobleness and perfection in the human soul, since this soul is young in infancy, dull in old age, inactive or nearly so in hydrocephalus, furious or senseless in certain diseases and injuries of the brain, impotent or outrageous in drunkenness and the effervescence of the passions. From the consideration of these phenomena then, we cannot help inferring the reality of a particular organisation for the faculties of the soul, an apparatus that emancipates the mind from the slavery of the senses, gives to every animated being a specific character, and measures out the world in which each species is inclosed.

If any doctrine concerning the functions of the brain were in contradiction with its structure, it would necessarily be false. Let it be shewn that the brain is composed of glands, and is an organ of secretion or excretion, it is then shut out from all higher functions, and reduced to the class of viscera. If a central point of termination of all the medullary fibres be shewn; if there be pointed out in all animals, in spite of their varying faculties, a cerebral mass constantly the same, the plurality and diversity of organs are annihilated. Whoever proves that the brain is only the central origin and termination of all the nervous systems, will have shewn that its functions are those of other nerves. If a constant identity of the constituent parts be shewn in the different individuals of the same species, in spite of the differences of their common faculties, it will then be impossible to assign the seats of the organs by comparing the predominance of their physical development with that of their psychological energy.

But if it is an invariable truth, that animals without intellect have also no brain, and are provided only with inferior nervous systems; that these systems are more numerous, when the vegetative or organic life is more complicated; that any faculty of the animal life, instinct, talent, or aptitude of whatsoever kind is never perceived, except in conjunction with a brain; that the constituent parts of the brain, from the worm to man, are multiplied and diversified in a direct ratio to the faculties; that all facts concur in proving that extraordinary energy of any faculty, always corresponds with extraordinary excitement and particularly development of some part of the brain; that the derangement of any faculty is connected with injury or disease of a part of the brain, as any affection or the loss of sense follows injury or disease of its physical apparatus; if, lastly, it be invariably true, that the brain consists of a nervous

system different from all others, and divided into several other systems so distinct from each other, that the differences of their origins, fasciculi, directions, points of union, &c. can be clearly demonstrated, then there is no doubt that the anatomy of the brain has an immediate connection and perfect accordance with our doctrine of its functions; and the metaphysician can no longer be justified for losing himself in the dark void of speculation, by saying that the operations of the soul are too deeply hidden to allow of our discovering their organs or material conditions." *Recherches*, &c. p. 244, et seq.

On the generally received opinions concerning the common origin and identity of the action of the nerves, Gall and Spurzheim observe; "by substituting, on all occasions, the metaphysical ideas of the schools, in place of the data furnished by the observation of nature, physiologists and even anatomists have supported these fabrics of error, which have been regarded almost as sacred objects. The soul, say the schoolmen, is simple: its material residence must then be simple also, and all the nerves must end in one spot. Aristotle, and several peripatetics of the 16th century, having fixed the seat of the soul in the heart, derived all the nerves from that organ: "These," says Cæsalpinus, can have but one origin, because each individual has but one soul." Bonnet, Haller and others, having extended its seat to the whole substance of the brain, were contradicted by the metaphysicians; who thought it too considerable; not considering that a little more or less room would not enable them to explain the nature of the soul any better, nor that, according to the remark of Van Swieten, Tiedemann, and others, the simplicity of a material point, in which all sensations and ideas should centre, is inconceivable, in consequence of the confusion and disorder which would result from such a concurrence. Nothing appears to us more ridiculous, than that the naturalist, to whom all nature lies open, should direct his researches and inductions by the guidance of such frivolous speculations. If the metaphysician would employ himself in the observation of facts, and in ascertaining the conditions on which they depend, his notions would no longer be at variance with the inferences drawn from anatomy, and one science would not arrogate the right of setting bounds to the progress of another. The doctrine of a single origin and centre for all the nerves is neither true nor possible. As this point can be verified by examination, it can no longer give rise to vague discussion. If, after this, the metaphysician cannot comprehend the unity of his individual consciousness (*l'unité de son moi*), we ask him, if he understands, in the organic life, how such different apparatuses concur, by their varied functions, in forming one whole? if he can reconcile, in the animal life, the circumstance of double organs with unity of functions, and simplicity of consciousness? if he knows what life is, or in general, if he can comprehend any single power in the material world? These enigmas, which prove that our knowledge is limited, should not prevent us from using our senses and mental powers in investigating the accessible secrets of nature." *Recherches*, p. 231—233.

In summing up their peculiar views concerning the functions belonging to different portions of the brain, they conclude; "Henceforward we may consider, in a much more exalted point of view, that most important part of the animal organisation, the assemblage of the nervous systems. The laws respecting their origin, successive increase, and final expansion, are in part discovered and reduced to a general principle. The nerve presiding over sensation and motion arises and is developed according to the same laws which regulate the organ, by means of which the mind per-



ceives, wills, and reflects. The brain will become an interesting subject, when it is no longer mechanically cut up, without any views, like a mass of inorganic matter. We shall now see in it dispositions for certain ends. All the old mechanical forms and connections will now be transformed into a wonderful collection of material apparatuses for the faculties of the soul. As the actions of the various viscera, and the sensations of our sensitive organs, are regulated by particular nervous organisation; so each instinct, and each intellectual faculty, in man and animals, will be found subordinate to some part of the brain. If, then, the mind eludes our grasp, we may at least retrace it in its organs, which indicate the degree of intelligence possessed by each species and individual. They not only form the line of demarcation between man and the brute, but, by shewing the development of the faculties, teach us how nature qualifies different men for wisdom or folly, for command or obedience.

“The time is not far distant when philosophers will agree with Bonnet, Condillac, Herder, Cabanis, Prochaska, &c. that all the phenomena of animated nature are founded on organisation in general; and that all intellectual phenomena flow from the structure of the brain in particular. A few drops of blood effused in the ventricles, a few grains of opium will prove sufficiently that volition and thought depend on the material conditions of the organs. Whoever wishes to understand completely the powers by which his machine is set in motion, to comprehend the nature of man and animals, and their relations to external objects, to establish a rational doctrine concerning the intellectual and moral functions, and the disorders of the mind, will find it indispensable to study the organisation of the brain, together with its functions. In this way the naturalist, the teacher, the moralist, and the legislator, may rectify their vague notions concerning human propensities and passions, and convince themselves, by sensible and evident proofs, that the human organisation is adapted to a superior order of intellectual and moral qualities; consequently that education, legislation, morality, and religion, are essentially connected with the nature of man; and, instead of being merely useful, are inseparable from his happiness: because they furnish motives to counterbalance his evil propensities, and increase more and more the moral freedom of his agency.” Ibid. p. 272—274.

*Membranes of the Brain.*—We shall place under this head what is either omitted, or too cursorily mentioned in the article BRAIN.

*Dura Mater.*—Although the dura mater adheres closely to the bone of the cranium, and numerous vessels pass from it to the latter, the facility with which it can be detached, so as to be exhibited entire, its thickness, its peculiar structure, and its nearly complete insulation in the vertebral canal, form a broad line of demarcation between it and the pericranium.

Over the whole bony arch of the cranium, this membrane corresponds to broad bones, with few and inconsiderable eminences. Its adhesion is weak, except at the sutures; it can therefore be easily detached from the frontal, parietal, upper part of the occipital, and squamous portion of the temporal bones. More or less difficulty is experienced in separating it from the sutures, the intervals of which give passage to numerous fibrous elongations, establishing continuity between it and the pericranium: these are most abundant in the sagittal suture. The inequalities of the external or cranial surface of the membrane, are most conspicuous in the course of the sutures. Through the sagittal, which is the only opening in the vault of the cranium, the

dura mater sends a small canal, inclosing a vein, and continued with the pericranium.

On account of the numerous inequalities and foramina, the disposition of the dura mater is much more complicated in the basis of the skull. It fills and adheres closely to the foramen cæcum, and is also firmly attached to the crista Galli, which it incloses. It lines the openings of the cribriform lamella; and the canals thus formed are continuous in the nose with the external or fibrous surface of the pituitary membrane. It sends small canals into the internal orbital foramina. Its adhesion to the convexities of the orbits is but slight. In the sphenoidal region it lines and adheres very closely to the common channel of the optic nerves: then forms at the foramen opticum a canal accompanying the nerve into the orbit. This canal splits, at the orbital opening of the foramen, into two layers; one of which is continuous with the lining of the orbit; the other forms a sheath, including the optic nerve as far as the sclerotica, and not adhering to it very closely. Behind the optic nerve, the membrane has a circular opening for the carotid artery, to which it adheres closely, and it forms a small separate canal for the passage of the ophthalmic artery.

The dura mater then lines the fella Turcica, where it is covered by the pituitary gland: on each side of this hollow it divides into two laminae, which form the cavernous sinuses. The internal thinner layer lines the hollow of the bone behind the orbit, serving for its periosteum, the outer forms the exterior side of the sinus. On the sides of the sphenoidal region, the dura mater passes over the lesser ala of the sphenoid, and lines the middle fossa of the basis cranii. It shuts up the superior orbital fissure, but sends into the orbit a thick and broad expansion, continuous with the periosteum of that cavity, which thus appears to be an extension of the dura mater. It can be seen best by breaking the upper part of the orbit with a hammer; the lining of the cavity remains entire: it is perforated for the passage of the vessels and nerves which enter the orbit. The adhesion of the dura mater to the cerebral surfaces of the temporal and sphenoid bones is but slight. Towards the side of the latter bone it forms remarkable sheaths for the nerves of the third, fourth, and fifth pairs. Each of these nerves is contained at first in a distinct fibrous canal, lined by the arachnoid coat, reflected from the nerve in the form of a cul-de-sac: it then lies on the cavernous sinus, from which it is separated by a thin cellular stratum, being covered externally by the dura mater, and, lastly, penetrates that portion of the membrane which closes the superior orbital fissure. The superior and inferior maxillary nerves are both accompanied by a fibrous prolongation of the dura mater. A cylindrical canal also lines the foramen spinosum, and is continuous with the external periosteum.

After this description it is easy to understand the disposition of the dura mater at the cavernous sinus. One layer of the membrane is exposed, when the basis cranii is laid bare, and it has no attachment to the bone; the other forms a periosteum for the bony hollow at the side of the fella Turcica, and behind the orbit. The lower and internal part of the interval between these is occupied by the cavernous sinus properly so called, containing the internal carotid artery, and the nerve of the sixth pair: the upper and outer by the third, fourth, and fifth nerves, separated from each other, and from the sinus by cellular septa. At the upper and back part of this interval, the canals transmitting the above-named nerves end; while other fibrous tubes, through which they enter the orbit, the foramen rotundum and ovale, commence from the lower and front part.



## NERVOUS SYSTEM.

The dura mater covers the upper surface of the petrous portion, as well as the upper branch of the Vidian nerve, from which it is easily detached. It adheres closely to the edge of the petrous portion, and then is continued towards the occipital region. In the middle and front of this it adheres very firmly to the channel of the basilar process, from which it is continued into the vertebral canal. Behind the foramen magnum its connections are comparatively loose. It has a simple fibrous opening for the passage of the nervus motor externus: it lines the meatus auditorius internus, at the bottom of which it is very thin, and the aquæductus Fallopii, at the termination of which it is continuous with the periotum. It forms two canals at the foramen lacerum in basi crani; one for the jugular vein behind, the other for the nerves in front: there is another similar canal at the foramen condyloideum anterius.

The internal or cerebral surface of the dura mater owes its smoothness, in the opinion of Bichat, to its being lined by a reflection of the tunica arachnoidea.

*Processes of the Dura Mater.*—The falx cerebri is placed in the middle line of the cranium: broad behind, and growing gradually narrower in front. Its upper convex edge corresponds to the frontal spine, to the middle of the frontal bone, to the sagittal suture, and to the upper division of the internal perpendicular ridge of the occiput; its under concave edge is unattached, and corresponds to the corpus callosum without touching it. The anterior narrow extremity is fixed to the crista Galli, which it incloses; the posterior broader end is continuous with the tentorium in its whole breadth. At the upper or convex edge of this process, there are three distinct portions of dura mater, one lines the cranium; two others, separate from this, are directed obliquely downwards and inwards, and unite into one, after leaving between them a triangular separation forming the superior longitudinal sinus. The single layer, which composes the greater part of the falx, is again divided below to form the inferior longitudinal sinus. It is also divided at the posterior end of the process, to form the torcular Herophili.

The tentorium cerebelli bounds the posterior fossæ of the basis crani, and separates them, in great measure, from the rest of the cranium. It is broader behind than before; its upper surface supports the back lobes of the brain, and the under covers the cerebellum.

A layer of dura mater lines the great transverse groove of the occipital bone; two others, a superior and an inferior one, are detached from this, have a triangular interval for the lateral sinuses, and then unite into a single nearly horizontal layer. There is a similar arrangement in the anterior part of the production, the interval forming the superior petrosal sinus.

The internal is much smaller than the external circumference of the tentorium, and has a form nearly oval. This edge is loose, and circumscribes the posterior and lateral parts of the opening, at which the posterior occipital hollows communicate with the rest of the cranium. The opening in question, which may be called that of the tentorium cerebelli, is not parallel to the great occipital hole. It is completed in front by the plate of the sphenoid bone; and entirely occupied by the tuberculum annulare. It is rounded behind, and terminated by a straight line in front; the membrane forming its sides ends in two elongated extremities, attached to the corresponding clinoid processes. At these extremities, the outer and inner circumferences of the tentorium are continuous.

The connection of the falx and tentorium maintains both these processes in a state of tension, which is destroyed by cut-

ting either of them. From this circumstance, anatomists have generally conceived that their use is to support the weight of the different parts of the encephalon, in the various attitudes of the body: viz. that the tentorium bears the posterior lobes of the cerebrum, and prevents them from pressing on the cerebellum, and that the falx supports the right or left hemisphere of the brain in the recumbent posture. The position and attachments of these processes certainly enable them to perform the office alluded to; but we have some doubts whether this mechanical explanation is very just, because the falx has been entirely deficient (see a case quoted in the article BRAIN), and often is imperfect in front, without any inconvenience resulting to the functions of the brain. The falx cerebelli is a small but thick triangular process of dura mater, placed under the tentorium, and in front of the perpendicular occipital ridge. Its front edge is loose, and corresponds to the interval between the two lobes of the cerebellum; the basis is continuous with the tentorium; the apex is placed downwards, and divided into two small secondary folds, which are insensibly lost at the foramen magnum.

*Organization of the Dura Mater.*—Is it formed throughout of two laminæ? Many anatomists have maintained this opinion, chiefly from the separations in many parts of the membrane for receiving the cerebral veins. In these, which are commonly called sinuses, we may distinctly see two, and sometimes three separate layers; but in other parts it is not possible to demonstrate two naturally distinct laminæ, although we might artificially separate the membrane into several strata. No membrane has a more manifest fibrous texture; and the fibres are particularly numerous and well marked in the folds, as the falx and tentorium; they decussate each other in every direction; and are arranged in whitish irregular bundles, sometimes slightly prominent. There is nothing muscular about them; the only foundation for ascribing such a nature to them was the motion observed when the membrane is laid bare during life; this arises entirely from the impulse of blood into the vessels of the brain.

The strength of the dura mater is very considerable; hence it is very easy to break the cranium with a hammer, leaving the membrane uninjured. This mode of removing the skull cap, in examinations of the brain, is recommended by Bichat in preference to the use of the saw. After exposing the bone in the usual way, you strike it smartly with the thin edge of a tolerably heavy hammer, all round. Very rarely is the dura mater injured, even where considerable force is used, and the bone consequently much beaten in. In dissecting the nerves of the head, where they are passing through canals or foramina of the bone, this way of proceeding is very advantageous; you break the bone into pieces, which are easily removed, the periosteum remaining entire.

It has no nerves, but numerous blood-vessels. Yet the capillaries, as in all the fibrous organs, are few in number.

Its extensibility is proved by what happens in cases of hydrocephalus; we have no facts to shew its contractility, although there is little doubt that the membrane enjoys this power. It has no animal sensibility in the natural state; hence it may be cut, or excited by chemical stimuli in living animals, without their giving signs of pain.

The pia mater belongs not only to the external surface of the brain, as the dura mater does; not only to that surface and to the great cavities, like the arachnoid coat; but also to the smallest depressions in the organ. Hence it is contiguous, and intimately adherent to the latter membranes by its external surface, at all the exterior prominences; but distinct at the depressions, particularly at the basis. Between the brain and the pons Varolii, the latter and the medulla spinalis, and between the two lobes of the cerebellum, the



the arachnoid is quite insulated, and may be elevated alone, leaving the pia mater entire below.

The internal surface of the pia mater corresponds every where to the substance of the brain, adhering to it by innumerable very fine vessels easily torn, so that the membrane may be detached without injuring the organ.

The external portion of pia mater covers the convexities of the hemispheres, their opposed flat surfaces, and the corpus callosum. If it be detached from the former parts, loose folded processes are drawn up from the intervals of all the convolutions, corresponding exactly in depth to the sulci of the brain. In front of the corpus callosum it is reflected to the under surface of the organ; behind it is continued into the lateral ventricles, and then prolonged over the cerebellum, entering into the intervals of its plates, as it does between the cerebral convolutions. Below it covers the anterior lobes, then enters deeply into the fissura Sylvii, where it is seen alone, the arachnoid passing like a bridge from the front to the middle lobe; it afterwards covers the middle and posterior lobes. In the middle it penetrates in front between the two hemispheres, which it covers as far as the under surface of the corpus callosum, quite distinct from the arachnoid, which passes from one to the other like a bridge. From the corpus callosum it passes to the union of the optic nerves, to the grey matter behind that union, the pons Varolii, and the medulla spinalis, entering deeply into the groove between the two latter parts. It covers the under surface of the cerebellum in the same manner as the upper, and enters between the two lobes, where it is very distinct from the arachnoid.

The internal pia mater, or that which lines the cavities, is continuous with the former. Under the corpus callosum and fornix there is a large transverse slit, at which the pia mater, from the upper surface of the cerebellum, enters the brain to form the velum; this middle slit is continuous, on each side, with another, placed between the thalamus opticus and corpus fimbriatum, at which the pia mater enters from the basis of the brain to communicate with the choroid plexus. At the openings just described there would be a free communication between the surface and the interior of the brain, were they not occupied by the pia mater, and closed by the arachnoid coat.

The internal pia mater forms first the velum, and then the choroid plexuses. The velum (toile choroidienne, Vicq d'Azyr) arises from the pia mater entering under the corpus callosum and fornix, lining exactly the under surface of the latter. It represents a triangle with a broad basis placed backwards, and corresponds in figure exactly to the fornix. It adheres to the under surface of the latter and of the corpus callosum by numerous fine vessels; below it adheres in the same way to the optic thalami, posterior commissure and tubercula quadrigemina; but in the middle it has no attachment, corresponding to the 3d ventricle, and exhibiting behind this part the termination of the arachnoid foramen, which will be presently described, and which is bordered by a series of small granulations on each side. The velum ends in front near the origin of the fornix, where it is continuous on each side with the extremity of the choroid plexus, through a small slit, by which the lateral communicates with the third ventricle (foramen of Monro). Behind the velum is continuous with the pia mater; here it embraces the pineal gland, and descends along its sides to join the folds at the basis of the brain, covering also the back of the optic thalami. Its margins pass between the edges of the fornix and the optic thalami, and give origin to the choroid plexuses.

The organs last-mentioned are seen in the lateral ventricles,

and lie along the edges of the fornix, and of the corpora fimbriata. Arising in front at the foramen of Monro, they go obliquely backwards, continuous in their whole length under the edge of the fornix with the velum; they turn forwards with the ventricles, and reach to the anterior ends of these cavities. In the latter part of their course they communicate directly with the external pia mater between the corpus fimbriatum and the thalamus. They are thick and large behind, and gradually grow smaller towards the front. They consist merely of pia mater folded on itself, instead of being extended into the form of a membrane.

*Structure of the Pia Mater.*—This organ very little deserves the name of membrane, under which it is commonly described, although it resembles membranes in its form, and convenience in description is consulted in considering it as one. If we examine it carefully, where it is not connected with the arachnoid, we discover in it merely a multitude of vessels connected by a loose transparent cellular tissue, without any of that consistence which constitutes a continuous membranous organ. The cellular tissue is susceptible of serous effusions, which cause an elevation of the arachnoid coat; it unites the pia mater to the latter, when they are in contact. The pia mater, on the other hand, is connected to the brain by very fine vascular ramifications entering its substance; these are visible in vast number when the organ has been detached from the brain, particularly after fine injections, and give the whole internal surface a villous appearance.

Hence we may form the following notion of the cerebral vascular system. The great trunks, that is the basilar and carotid arteries, lie at the basis between the brain and the cranium; the principal branches are lodged in the great divisions of the encephalon; the secondary divisions run in the smaller depressions of the organ. The minute subdivisions form over the whole organ an extremely extensive vascular network, of which the interstices are filled with a fine delicate cellular tissue never containing fat. From the combination of the vascular network and the cellular substance a stratum of a membranous form results, the pia mater. The effect of this arrangement is to produce a very minute division of the cerebral vessels, so that they enter into the tissue of the brain only in the form of very fine capillaries. And this is a striking difference between the brain and other viscera; for in the latter the vascular trunks enter the organ immediately, and are divided in it.

These observations are equally applicable to the velum and choroid plexus. In the latter, however, some of the granulations are seen, and small serous vesicles are often observed.

*Arachnoid Coat.*—The views entertained concerning this membrane by Bichat are in some respects new, and his account of it is minute and accurate. "All important organs, says this anatomist, all such as are subjected to habitual motion, are surrounded by a serous membrane, which circumscribes them, insulates them from the neighbouring parts, and favours their alternate expansion and relaxation by the fluid which lubricates its polished surface. This arrangement is universal; the lung, heart, stomach, and other abdominal organs, and the testicle afford examples of it. This uniformity had long led me to suspect that the brain ought not to form an exception to the general rule, and that it ought to possess an investment analogous to the serous membranes of the great cavities. This suspicion will be realized if I can shew plainly that the external disposition and relations, the internal structure, the functions and affections of the arachnoid, are exactly the same with those of the serous membranes." *Anatomie Descriptive*, t. iii. p. 32.

The extreme tenuity of the membrane renders it difficult to



to decide on its nature by direct examination; we must therefore have recourse to analogy. In possessing a smooth, polished, and shining surface, moistened by serous fluid, contiguous to, and never continuous with, the surrounding organs, in the small number of blood-vessels, and abundance of exhalants and absorbents, in the essential basis of its texture, which is cellular, and in its transparency, when detached, the arachnoid resembles the serous membranes. Its tenuity is not more remarkable than that of the omentum. The vital properties of this membrane are exactly the same with those of the serous organs.

In forming to the brain a membranous limit, which insulates it from the surrounding parts; in constantly exhaling a serous fluid to moisten its surface, and absorbing it again, the arachnoid closely resembles serous membranes. When its surface is laid bare in a living animal, and wiped dry, moisture is quickly reproduced. It may be alleged that the dura mater is concerned in the exhalation and absorption of this fluid; but Bichat considers that its smooth surface is a reflection of the arachnoid. The proper tissue of the membrane cannot with any show of reason be supposed to exercise such a function. The fibrous membranes, to which it belongs, are never employed in that way, nor does the dura mater itself, where it lines the orbit, exercise such a function. We cannot suppose that the dura mater is concerned with the arachnoid coat in producing the fluid, as these secretions are in all instances furnished by one membrane only; and the arachnoid alone produces it in the ventricles.

The arachnoid, particularly in the ventricles, like the serous membranes, is liable to serous effusions or dropsies; it also exhibits adhesions in consequence of inflammation, and becomes white and opaque like those membranes.

From this view of the organisation, vital properties, functions, and diseases of the arachnoid, we may safely draw the inference, that it belongs to the class of serous membranes.

*Disposition of the external Arachnoid.*—Every serous membrane forms a bag without any opening, covering the organs to which it belongs, and lining the cavity on which they are contained, affording sheaths to the vessels, and not penetrated by them; so that nothing is contained in its cavity, which would remain entire, were it possible to remove it by dissection. In this way the arachnoid covers the brain, its nerves and vessels, and lines the dura mater, none of these parts being contained in its cavity, which holds only the fluid that lubricates it.

It may be rendered evident by inflation on the convexities of the hemispheres; here it affords a sheath to each vein entering the superior longitudinal sinus, and includes, in the same way, the granular bodies in this situation: these sheaths are continued on the surface of the dura mater; consequently, it adheres to that membrane in numerous points along the course of the sinus. It covers the opposed flat faces of the hemispheres, and the corpus callosum, separated from the latter by its arteries, and gives sheaths to the veins of the inferior longitudinal sinus. It is then extended over the posterior lobes, and passes to the upper surface of the cerebellum, which it covers in the same way that it does the cerebrum. In this course it furnishes sheaths to the veins of the lateral and fourth sinuses. In passing from the cerebrum to the cerebellum, it may be seen distinct from the pia mater on both its surfaces; and a large portion is insulated in the same way at the fissure between the two lobes of the cerebellum.

It enters into the fissure between the two anterior lobes, at the front of their under surface, but passes directly over behind, so as to unite them closely. It covers the olfactory nerve, and forms a sheath for the optic; it incloses the infun-

dibulum, is extended over the surface of the pituitary gland, and surrounds the internal carotid at its entrance into the cavity of the cranium. The arachnoid then goes under the pons Varolii, lying quite detached from the surface, in a considerable extent between the union of the optic nerves, and the front edge of the pons. It is also completely insulated over the whole surface of the pons. It is extended to the sides of the cerebellum, and the commencement of the medulla spinalis, being quite loose and unattached at all the grooves about these parts. It furnishes sheaths to the various nerves in these parts, and to the vertebral arteries, and is continued into the vertebral canal.

These folds of the membrane may be seen most advantageously by lifting up the brain cautiously, for they are very easily torn, particularly those of the olfactory and optic nerves; they are loose, broader towards the brain, and narrower towards the nerve, and are reflected generally from the latter to the dura mater, so as to allow the nerve to pass on alone to its destination.

It will appear from the preceding description, that the whole mass of the encephalon is enveloped by the arachnoid, as the heart, lung, &c. are by their respective membranes, with this difference only, that the reflections are more numerous, on account of the greater number of nerves and vessels. To complete the analogy, it remains for us to prove, that it lines the internal surface of the dura mater. Bichat describes the sheaths of the nerves and vessels as continued to the points where they penetrate the dura mater, then united together and forming a general lining to the dura mater and its processes, corresponding to the pleura and peritoneum lining the thorax and abdomen. Thus we shall have a cranial and a cerebral division of this membrane, as we have a pleura costalis and pulmonalis.

It must be acknowledged, that this view of the subject is suggested rather by analogy, than by the direct evidence of dissection. Yet Bichat says, that shreds of arachnoid may be detached from the dura mater, and are thin and transparent, instead of exhibiting the fibrous texture of the exterior strata; and that this detachment is easier in the fœtus and child, than in the adult. He says also, that the continuity of the two parts may be easily traced at the sheaths which have been mentioned. The polished surfaces of organs in all other situations are owing to serous membranes, which adhere sometimes very closely, as in joints, the sheaths of tendons, &c. We cannot detach the conjunctiva from the cornea, although no anatomist doubts of its being extended over that organ.

*Internal Arachnoid.*—It is the opinion of Bichat, that this membrane lines the cavities of the brain, and that the pia mater only produces the choroid plexuses. He acknowledges, that it is so extremely thin, where it covers the cerebral substance, that it cannot be raised and exhibited distinct; its existence must, therefore, be inferred from analogy. He observes, that the surface has the same polish as that of the arachnoid; that it is the seat of an analogous serous exhalation and absorption; and that it is subject to dropsy, like serous membranes. He considers, that the water in hydrocephalus could not be confined to the ventricles, were they not lined by a membrane, but that it would escape where the choroid plexuses enter. He describes a continuity between the internal and external arachnoids, by means of an opening about the vena magna Galeni.

This opening includes the vein and its ramifications, and is formed in the process of pia mater that constitutes the velum; it passes between the veins and the pineal gland, and opens in the third ventricle. By it the arachnoid enters the ventricles. It appears, from his subsequent account,



## NERVOUS SYSTEM.

that a small probe may sometimes be introduced along the canal, but that this is not always practicable. In order to discover it, the cranium should be carefully sawn, and the falx removed without any violence, that the parts may not be disturbed. The posterior lobes should be raised, and gently separated, and the vein of Galen will be seen emerging from the opening which surrounds it. The internal aperture may be found by turning back the velum and pineal gland; on the under surface of the former is a triangular arrangement of granulations in front of, and over the latter. At the basis of this triangle, and just above the pineal gland, the opening will be found. Bichat conceives, that the internal arachnoid covers the choroid plexus, besides lining the ventricles.

*Glandula Pacchioni*, (granulations cerebrales, Bichat.)—Small whitish granular bodies, of unknown function, but supposed by Pacchioni, whose name they bear, to be glands, are found in clusters in different situations about the membranes of the brain. They are tolerably firm in their texture, and in size about equal to large pins' heads; they occur chiefly in the sinuses, and the pia mater.

They are most abundant about the middle and posterior portions of the superior longitudinal sinus, and appear naked in the cavity when the vessel is slit open. They are placed principally round the orifices of the veins, and are so connected to each other, in the bundles which they form, that they cannot be separated without rupture. Some are found in the lateral sinuses, at their posterior portion corresponding to the occipital bone; and these are also placed at the orifices of the veins. The other sinuses do not possess them, excepting the fourth, where they are occasionally seen at the opening of the vena Galeni. The granulations of the sinuses are larger and less dense than those of the pia mater; their texture and use is unknown. They are very rarely affected by disease; Bichat mentions ossification as a change occasionally exhibited in them.

These bodies are just the same in the pia mater as in the sinuses, excepting their size. They are placed at the sides of the superior longitudinal sinus, and about the venous trunks, and are continuous with those of the sinus. They lie in the substance of the pia mater, and the dura mater adheres closely to them on the outside, being elevated by them into small protuberances on each side of the superior longitudinal sinus. They are only seen along the course of the latter vessel; they are whiter, smaller, and more firm than those in the sinuses.

The choroid plexuses contain several reddish or greyish granular bodies, which are softer than those just described; and there are some on the under surface of the velum, just in front of the pineal gland. They form two lateral rows, converging so as to form a triangle, at the base of which Bichat describes his arachnoid foramen to open. Towards the lower part and side of the fourth ventricle, there are small folds of dura mater, containing similar granulations.

*Gall's Description of the Brain.*—He conceives this organ to be composed of two substances, exactly similar to those in other parts of the nervous system; viz. of grey, gelatinous, or pulpy matter (the cortex), varying in its colour and consistence; and of white nervous fibres (the medulla.) The opinions of anatomists concerning these constituent elements of the cerebral fabric have been very various, and have agreed only in one point, that of being altogether unsatisfactory. Malpighi and his contemporaries generally regarded the cortex as composed of glands, destined to secrete the nervous fluid; some assign to it the latter office, without undertaking to determine the nature of its composition. Ruyfch, followed by Haller and most physiologists of that

time, regarded it as a tissue of fine vessels; and others have pleased themselves by imagining, that it was a very attenuated prolongation of the blood-vessels entering into the very substance of the nerves. Such trash is beneath animadversion. Although the cortex contains many vessels, Albinus and Soemmerring have shewn that there is in it something besides them. Equally numerous and profound opinions have been held concerning the medulla. Some affirmed, that it had no blood-vessels; others, that it was entirely composed of them; some held it to be solid, others tubular. Many conceived it to be made up altogether of globules. Leeuwenhoek, Vieussens, and Steno thought it fibrous; but they, as well as Soemmerring, Cuvier, and others, who recognised fibrous structure in many parts, never went so far as to declare the whole to be fibrous. Many modern anatomists and physiologists still maintain, that it is equally pulpy throughout, and fibrous in no part; that it is, in short, a soft medullary matter.

Gall and Spurzheim view in the cortex of the brain, as in the analogous substances in other parts of the nervous system, the origin or source, and the organ of enlargement or strengthening of the white nervous fibres. And they regard the medulla as being every where fibrous. The fibres are visible when the substance is torn, or gently scraped with the handle or back of a knife. They never appear in the common dissections, because smooth cuts are entirely unfit for exhibiting the texture of a fine and soft mass. To the objection, that the fibrous appearance is made by the scraping, they reply, that it cannot be exhibited by scraping across the course of the fibres. "In hydrocephalus, the fibres are seen very distinctly. They may be rendered visible by blowing air, or injecting water on the surface, so as to separate the strata from each other. For the same purpose, we may boil the brain, either altogether, or in parts; or macerate it in nitric or muriatic acid, diluted with water or spirit of wine. If the white substance be scraped in the direction of the fibres, they may be followed with the naked eye into the cortical matter of the convolutions; but if we scrape across the fibres, or obliquely, they are displaced or torn." (*Anat. et Phys. du Syst. Nerveux*, t. i. p. 236.) Considering that the expressions medulla, and medullary substance, are likely to recall the old, and in their judgment erroneous notions of the pulpy structure of the brain, and to draw away our attention from its fibrous nature, these anatomists lay them aside altogether.

They blame very severely the ordinary methods of proceeding in the dissection and demonstration of the brain, and we cannot help regarding their complaints as well-founded. Nothing can be worse calculated to shew the natural connections and dependences of the various organs, than the ordinary exhibition of vertical sections. What notions should we gain of the eye, the heart, or any other part, by contemplating them when cut up into horizontal slices? A perseverance in the use of such methods can only tend to perpetuate our ignorance, and to keep us for ever in the dark, as to the structure and functions of these important parts. Gall and Spurzheim proceed on a plan pointed out by their views of the relations between the cortex and medulla. "We have shewn, say they, that the grey matter and the nervous fibres are the constituent parts of all nervous systems, and that the latter every where arise from the former. Can we assign to these substances a different destination in the brain, from what they have every where else? As we place the origin of the abdominal and thoracic systems in the ganglia, of the spinal nerves in the grey substance of the medulla spinalis, &c., we refer the commencement of the white fibres in the brain to the cortical matter.

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We have proved also, that the nervous systems are not formed, nor brought to perfection at once; but that, inconsiderable at their origin, they acquire accessions in the grey substance and the ganglia, until they are completed. How then can we adopt a method more conformable to the course of Nature, than to begin our researches where she commences her work, to trace the various degrees of development, and to conclude them where the organ is completed? Can we expect by a contrary course, or by the violent separation of parts, to gain an exact knowledge of the means, by which Nature has attempted to arrive at a common end?" In conformity with these views, they endeavour to follow the course of the nervous fibres from their origin to their termination, and employ only such sections as are calculated to illustrate this point? The texture of the brain renders the edge of the knife a very inconvenient means of accomplishing their purpose; they rather employ a blunt instrument, as the handle or back of the knife, and proceed by scraping.

*Cerebellum.*—Gall and Spurzheim begin with this organ, as it immediately follows the systems of the spine and of the senses. They refer its origin to the grey substance contained in the great swelling above the cervical nerves (medulla oblongata); the same point to which they trace the beginning of most of the nerves of sense, of the facial, trochlearis, and trigeminus. The origins of the cerebellum form two large bands, one on each side of the medulla oblongata, behind the corpora olivaria, hitherto known by the name of corpora restiformia, or crura cerebelli ad medullam. This band increases in size as it ascends, and the grey substance, or ganglion of the auditory nerve, lies upon it. When that is removed, its fibres may be easily traced into the interior of the hemisphere of the cerebellum. After penetrating a few lines, it meets a collection of grey substance (corpus dentatum, ciliare, or rhomboideum, zigzag) with which the white fibres are so closely interwoven, that they cannot be followed. This is the ganglion of the cerebellum, and the point of origin and increase of most of the nervous mass of the organ. Many new fasciculi arise here, and branch out into the various subdivisions of the cerebellum; wherever a principal branch comes off, the cineritious matter rises into an eminence; and hence the dentated or fringe-like prominences of the ganglion. As this body is a principal origin of the cerebellum, its size is in proportion to that of the latter organ. In most mammalia the cerebellum is much smaller than in man, and this ganglion is much smaller and less distinct. The corpus restiforme is also smaller in the same proportion.

The medullary fasciculi passing from the corpus ciliare ramify into the various subdivisions of the cerebellum; a principal one passes towards the median line, and concurs, with the corresponding one of the opposite side, in forming the middle part of the cerebellum (processus vermiformis). This is the fundamental part (partie primitive ou fondamentale) found in all animals, whatever be the disposition of the brain in other respects. The lateral parts are superadded in different animals in various proportions. The band, which produces this middle portion, generally divides into seven principal branches, which are distinctly seen by a vertical section; the further divisions vary in number and length. In animals of the lower orders, and even in birds, this composes nearly the whole of the cerebellum; but in the mammalia lateral portions are added, so that the part first mentioned becomes the middle piece (piece mediane of Reil). The other fasciculi go out of the ganglion backwards, upwards, downwards, and outwards, expanding into their horizontal strata. The external surface of all these strata, as well as that of the similar layers composing the fundamental piece, is covered by cineritious matter. A vertical section shews

here, as in the middle piece, trunks of white substance dividing into smaller and smaller branches (arbor vitæ). A section carried through the middle of the ganglion generally discovers eleven principal branches: as we deviate from this middle line towards either side, the number diminishes. There is considerable variety in the further branchings and subdivisions. A transverse section exhibits merely a simple stratum of white substance bordered by the grey matter.

In order to exhibit these appearances, nothing more is necessary than to make a vertical section, in the direction of the primitive band, so as to divide the ganglion into two equal parts.

Thus far we have seen the nervous fibres of the cerebellum diverging from each other, expanding into the laminae which compose that organ, and always occupying a larger circumference. But there is another order of fibres, arising from the cineritious matter of the surface, passing in the intervals of those first described, which they cross, always converging towards the anterior margin, where they form a broad and thick fibrous layer. The posterior and middle filaments pass transversely through the longitudinal bands of the medulla oblongata, which go to diverge in the hemispheres of the brain. The anterior filaments lie in front of these bands in the form of a broad fibrous layer in man. They all unite in the middle line with their fellows of the opposite side, thereby joining the two hemispheres of the cerebellum, after the same manner as the hemispheres of the brain are united by the corpus callosum, &c. This part, which now goes under the name of the pons Varolii, or tuberculum annulare, is really then the great commissure of the cerebellum; and is always in a direct ratio to the size of the hemispheres, as the primitive bands are to that of the ganglion. The mammalia, having smaller cerebella, have also this commissure smaller. In man, where the cerebellum is so large and so fully developed, the commissure is particularly broad, covering the origins of many of the nerves, which are exposed in other animals. In fishes, reptiles, and birds, this commissure is not found, or, in common language, there is no pons; for these animals have no lateral parts to their cerebellum, and consequently no converging fibres to form it. But all animals have a commissure of the fundamental part, independent of the commissure of the lateral parts, or pons. This commissure is formed by the soft and fine fibrous layers from the superior and inferior parts of the middle or fundamental portion, commonly called the superior and inferior valves.

The two orders of nervous fibres described above are distinguished by the following names; in reference to their anatomical arrangement, the first, or those produced by the corpora restiformia, are called "filets fortans ou divergens;" and the second, or those of the commissures, "filets rentrans ou convergens;" in a physiological point of view, the first are called "appareils de formation;" and the second, "appareils de reunion."

The ordinary opinion, that the cerebellum contains more cineritious substance, in proportion to its size, than the brain, is erroneous; the mistake arises from our generally making horizontal sections of the brain, and vertical ones of the cerebellum. The size and development of the cerebellum do not observe any determinate proportion to those of the brain; it may be small when the brain is large, and *vice versa*. Malacarne has found it to vary from the sixth to the eleventh part of the weight of the brain; and in a child he states that it is  $\frac{1}{13}$ th,  $\frac{1}{14}$ th,  $\frac{1}{17}$ th, or even  $\frac{1}{35}$ d part of the whole weight of the brain.

Generally the cerebellum is smaller in the male than in the female, both in man and in animals: but this observation is not invariably true.



It will appear from the preceding description that the cerebellum is a symmetrical organ, or that it is divisible into a right and left corresponding half; although these do not always resemble each other strictly. The same parts are not invariably alike in different individuals. Reil has already shewn that the length and breadth of the medullary ramifications, and the number, form, and direction of the plates in which they end, vary infinitely in different individuals.

*Cerebrum.*—In describing this part, Gall and Spurzheim confine themselves principally to man, because the organization is most perfect, and the various parts can be represented in the most intelligible manner. They state that there is no faculty, no mode of action depending on the brain, in animals, of which the type is not discoverable in the human subject; hence the brains of animals may be regarded as fragments of the human brain, and we find united in the latter, all the parts that are scattered through the different classes of animals. If we could remove some organs from the human brain, we should reduce it to the brain of animals; and by adding to the latter, it would be elevated to the rank of a human brain.

As the cerebrum consists of many divisions, the functions of which are totally different, there are many primitive bands contributing by their development to form it. All these are composed gradually by fibres produced in the cineritious substance of the medulla oblongata (le grand renflement). They are to be considered as the first visible rudiments or commencement of the brain, having communication and reciprocal actions with the surrounding systems. Among these primitive bands are placed the anterior and posterior pyramidal eminences, the bands which proceed from the corpora olivaria, the longitudinal nervous bands, which contribute to form the fourth ventricle, and some others which are concealed in the body of the medulla oblongata. The bands pass into the hemispheres on the same side in which they originate, with one exception; this is in the anterior pyramidal eminences. Here the fibres which arise on the right side, unite in the first instance into a few cords, which pass obliquely over to the left, in the same manner they pass from left to right; each cord going over one and under another of the opposite side, so as to form a kind of interweaving, like basket work. This decussation occupies a space of four or five lines at the lower extremity of the medulla oblongata. The bands afterwards pass up on the anterior surface of the medulla, gradually acquiring the pyramidal form. This appearance is very easily demonstrated, and is totally distinct from the transverse layer or commissure, visible both above and below this part in the anterior fissure of the medulla. The authors hint, that as the fibres of the anterior pyramids are the only ones which decussate, so it is only an injury of that part of the brain which is a continuation or development of those bodies, which affects in its consequences the opposite side of the body. Injuries of the cerebellum, of the posterior lobe, and of part of the middle convolutions of the brain, would affect the same side; these parts being continuations of fibres that do not cross.

The pyramids, as soon as they enter the tuberculum annulare, divide into many bands, which lie in a considerable mass of cineritious substance; from this many new fibres arise and join them. The bands are so much enlarged, when they pass out from the upper part of the pons, as to form nearly two-thirds of the crura cerebri (les grands faisceaux fibreux). The pons then is to be regarded as a true ganglion, in which the corpora pyramidalia are strengthened and enlarged so as to form the crura cerebri. The transverse nervous bands of the pons are, as was before mentioned, the commissure of the cerebellum. This course of the pyramids may be seen

by making an incision of about a line in depth in the pons, from the pyramid to the crus cerebri, and then turning aside a layer of the transverse fibres of the pons, of the depth already mentioned, with the handle of the knife.

The great fibrous bands composing the crura cerebri are then a continuation and further development of the pyramidal eminences. They contain in their interior much cineritious substance, from which they are constantly strengthened by new fibres. They receive the greatest accessions at their upper end, where the optic nerve turns round their external surface. The nervous threads and fasciculi formed at this part are prolonged into the hemispheres, and end at last in composing strata, of which the surface is covered by grey substance (the convolutions of the brain).

Thus the pyramidal bands may be traced from their origin until they are perfected and terminated in the inferior anterior and external convolutions of the front and middle lobes. The pyramids and their ganglion in the pons, the crura cerebri, and the convolutions which these form, are always in proportion to each other; the latter are much smaller in the mammalia than in man, and all the parts first mentioned are consequently smaller.

The same principle of structure is followed in the formation of the posterior lobe, and of the convolutions situated at the upper and internal edge of each hemisphere. The corpora olivaria are ganglia: a strong fasciculus proceeds from them on each side, and joins the posterior bands of the medulla oblongata. These cross the tuberculum annulare through the transverse fibres of the commissure of the cerebellum, and form the posterior and inner third part of each crus cerebri. They receive but little addition until they enter a thick mass of cineritious matter, known generally by the name of thalamus opticus. In this ganglion there is a large quantity of nervous filaments, which ascend, and unite at their exit from the upper part of the ganglion into bands that diverge in a radiating form (en manière de flammes ou de rayons). They then traverse another large mass of cineritious substance, the corpus striatum, where they receive fresh accessions, so that they are sufficient in number to form the convolutions of the posterior lobe, and those placed internally at the upper part of each hemisphere.

The thalami optici and corpora striata are in this view considered as true ganglia, in which the nervous fibres are increased in number and size, and are prepared by degrees to form their respective convolutions.

“In examining under a general point of view the manner in which nature proceeds to the primary formation of the two hemispheres of the brain, we see that the original bands are produced in the cineritious substance of the medulla oblongata, and reinforced in different places by particular masses of the same matter, and that the same laws prevail here as in the nervous systems of the abdomen, thorax, spine, nerves of the head and cerebellum.” As all the preceding systems are gradually expanded in the internal and external organs of their functions, and then reach their final destination, the fasciculi of the brain undergo a similar successive expansion, and become the organs of the most noble and important functions.” Anat. et Phys. du Syst. Nerveux, t. i. p. 824.

The two sides of the brain communicate together by transverse fibres (filets convergens ou appareils de réunion), as the systems of the spine, cerebellum, &c. have their two halves brought into reciprocal action. The ascending or diverging fibres have been followed into the cortical or cineritious substance, which they penetrate to some depth, making the internal part of a lighter grey than the external. How they finally terminate is not positively stated.

Gall



Gall and Spurzheim think it probable that new nervous fibres are produced in the cineritious matter, intimately connected with those whose course we have been following. The existence of the converging fibres may be more readily demonstrated than even that of the diverging: they may be seen at the bottom of every convolution decussating the latter, with which they are intermingled. In this way the two systems form a very firm tissue at the bottom of the convolutions, and at the circumference of the cavities. As the converging fibres draw near to the middle, they form distinct fasciculi and layers, which advance to the median line, and are there continuous with the corresponding parts of the opposite hemisphere forming the different unions or commissures. These fibres are softer and whiter than the others; the two orders decussate each other, and form particular strata lining the interior of the cavities. The corpus callosum, with its dependencies, the fornix, lyra, &c. the anterior and posterior commissures, are formed by these converging fibres. The fornix, lyra, posterior edge of the corpus callosum, and the anterior commissure, unite the inferior convolutions of the two hemispheres: the corpus callosum joins all the upper convolutions, and its two extremities are thicker than the middle, because they contain the converging fibres belonging to those portions of the hemispheres which entered in front and behind beyond the boundaries of this body. The size of these bands of union is always proportionate in animals to that of the parts which they join. As certain parts are very small in birds, the commissures, corpus callosum, &c. are also insignificant in size, and have commonly been said to be deficient.

Gall and Spurzheim proceed to describe the different cavities of the brain, and the structure of the convolutions. As soon as the diverging fibres have decussated with the converging ones at the outer side of the great cavities, the former begin to separate from each other, and are prolonged, like all the other nervous systems, into a fibrous expansion. But these fibres are not all of the same length: some end near the side of the ventricles; others are prolonged considerably further: thus the convolutions and their intervals are formed. They are all covered on their surface by a stratum of grey matter.

A vertical section of a convolution shews the white fibrous substance broader at the basis of connection to the hemisphere and narrower at the opposite end; because the lateral fibres are gradually lost in the grey substance, while the middle ones only reach the end. "Yet the fibres of each convolution are not united into a single fasciculus, but they form two strata touching each other in the median line, and slightly agglutinated by a mucous neurilema, or very fine cellular tissue." The same principle is observed in the plates of the cerebellum. At the same time each convolution contains fibres arising from the grey substance and proceeding towards the commissures; consequently each is composed of 1, diverging fibres; 2, of very fine converging fibres; and 3, of an exterior cortical covering. On this structure is founded the possibility of separating the two strata without injuring them, and of extending the convolutions into a horizontal layer, so that the hemisphere may exhibit a continuous plane surface (*le déploiement ou dépliement des circonvolutions*).

This unfolding of the convolutions is a point of the new opinions which has been very strongly contested, and on which we should conceive, from the data now before us, that it is not easy to decide certainly. The commissioners appointed by the National Institute did not admit the correctness of the representations made by Gall and his associate: the latter gentlemen argue the question at considerable length

in their remarks on the report (*Recherches, &c.* p. 165—206.), as well as in the 9th section of their great work, p. 297, et seq.

The following paragraph appears to exhibit most precisely the opinions of the authors. "Let it be observed, on this subject, that, in advancing that the two layers of a convolution are in contact (*adossées*), we did not assert that they are simply in contact. Moreover, we admitted between them an adhesion of contiguity, maintained perhaps by cellular substance; but not a connection of continuity produced by confusion of substance. In our opinion, then, the union is of that kind which might be denominated *agglutination* (*anklebung*, Germ.) but not *concretion* (*verwachsung*)." *Recherches*, p. 200.

They say, that if a piece of the hemisphere be taken, the pia mater removed, and the tissue that forms the sides of the ventricle destroyed, a very slight force is sufficient to unfold or extend the whole into a membranous expansion, without any destruction of fibres: the internal surface of this expansion is white, smooth and uninjured (*intacte*), the external is cortical. An analogous process takes place in hydrocephalus: the tissue composing the sides of the ventricles is distended into an enormous bag, by which the convolutions are gradually unfolded: their fibres, which in the natural state are vertical from the basis to the apex, are now extended horizontally with respect to the contour of the cavities, so that the bag holding the water is composed of a continuous flat stratum of the white fibres, covered by a similar layer of grey substance. It was the observation of what occurs in this disease, and particularly of the integrity of the intellectual functions in a remarkable case, indicating that the brain undergoes no essential injury, or is not destroyed, that led Gall to notice this fact in the structure of the convolutions.

If the convolutions are cut off on the outside of the cavities, they may be extended into a plane surface, without any injury of substance. If similar portions are hardened in alcohol, or in a mixture of nitric or muriatic acid and alcohol, or if they are boiled for a few minutes in oil, the two strata separate very easily, and only in the median line; no vestige of torn nervous fibres can be seen on the internal surfaces, although the fibrous expansion is very visible. When air is impelled on the cut surface of a convolution, or when a stream of water is directed on it from a syringe, a similar separation in the middle line takes place from the basis to the apex. If an opening be made on the side of a convolution from without, and fluid injected into the aperture, it produces a separation in the middle line for one or two inches on each side.

Gall acknowledges that there are some parts of the brain, as the pineal and pituitary glands, &c. of which he cannot hitherto assign the connections and object in his system. He terminates his view of the organ by a series of general propositions, embracing the points, which we have already detailed, under the title of "*thèses générales anatomiques*," which conclude the tenth section of the first volume of his large work.

*Physiology of the Brain. Its Motion.*—When this organ is exposed in a living animal, its surface alternately rises and sinks: the elevation is synchronous with the pulsation of the arteries, and the subsidence with the diastole of the heart. In the young subject, while the fontanell is still membranous, a pulsation can be felt at that part, coinciding with that of the arteries, and arising from this motion of the brain. This phenomenon is owing to the projection of blood into the arteries of the brain. Some physiologists, as Senac, Bordeu, and Bichat, consider that it arises from  
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the great arterial trunks being placed at the basis of the brain, between the latter organ and the bone; as their distention is resisted by the skull below, it elevates the brain above, just as a tumour placed over a large artery is raised by the pulsation of the vessel, and as the whole lower limb is elevated by the influx of blood into the popliteal artery, when a person sits with one knee across the other.

It is an opinion of Bichat, that the impulse communicated to the brain by this motion of the arteries, is essential to the functions of the former; and he explains the death, consequent on tying all the four arteries of the brain, by the interruption of this impulse. See HEART; sixth column from the end.

This motion of the brain was ascribed, about the beginning of the last century, to a contraction and relaxation of the dura mater, to the fibres of which a power of contraction was granted for this purpose. If the fact of the intimate and universal adhesion of this membrane to the cranium had not been sufficient to shew them the absurdity of the opinion, it might have been refuted by the no less obvious circumstance that the motion in question is exhibited just the same when the dura mater is removed from the surface. It must greatly diminish our confidence in names, when we learn that an hypothesis, so contrary to all the facts, was received with great and almost unanimous applause; and supported by Baglivi, Pacchioni, Miltichelli, Lancisi, Fred. Hoffmann, Santorini, Valsalva, and the school of Stahl.

Another kind of motion has been observed in the brain, not constant like the former, but occasional, and synchronous with the respirations. When we interrupt our breathing, as in straining, or any violent efforts, the blood is collected in the venous system, and produces redness and venous distention over the head and neck. The internal vessels are affected in the same way as the external. Haller asserts that the brain rises at each expiration, and subsides at the following inspiration; and that this motion may be perceived in the infant before the fontanell is closed, or in man or animals, in whom the brain has been exposed. There is so little sign of venous distention in natural respiration, that we can hardly expect what has been just described to be a constant phenomenon; although it is easily conceivable that in coughing, crying loudly, holding the breath for some time, &c. a visible elevation should occur; that the sinuses should swell, blood or matter be forced out from a wound of the brain, &c.

*Sensibility of the Brain.*—The cortical substance of the organ may be cut, pricked, or irritated by chemical stimuli, without the animal giving any signs of pain. Yet the pressure of a little blood, pus, or splinter of bone, on the surface of the brain, and other causes of that description, often produce very severe sufferings. The result of experiments on animals has led physiologists to consider the cortex insensible. Haller Elem. Physiol. t. iv. p. 314.

If the instrument reach the white substance of the brain, signs of pain are observed; but these are very obscure on the convexities of the hemispheres. When you penetrate deeper, the animal cries and is convulsed; and these signs are increased in degree, in proportion to the depth of the injury. The pain is never so acute as when the medullary substance of a nerve is irritated. The consequences of injury or disease of the medullary substance in man are analogous to these effects of violence in animals. We find that tumours, abscesses, effusions of blood, pus or water, funguses, &c. excite the most excruciating pains.

A considerable quantity of the substance of the brain, including both cortical and medullary matter, has often been lost in consequence of injury; yet the individual has re-

covered perfect health, and complete enjoyment of all his intellectual faculties. In experiments on animals, where the quantity of brain destroyed exceeds a certain limit, the opposite side of the body is paralyzed; and sheep with hydatids in the brain exhibit the same phenomenon. Dogs of a middling stature may lose from 50 to 70 grains of cerebral substance and recover; rabbits hardly 6, fowls and pigeons 12. After such wounds convulsions take place, difficult breathing with widely opened mouth, considerable secretion of saliva, and indications of great pain. If the wound reach the ventricles, death quickly ensues. Where an animal survives the loss of a portion of the brain, a yellowish soft substance rises up, and fills the vacancy; a limit can be easily perceived, distinguishing this from the proper substance of the brain. The ventricle at the same time is expanded towards the wound. Soemmerring, de Corp. Hum. Fab. t. iv. p. 113, note 7.

The brain is the seat of sensation, or the point to which all impressions, whether external or internal, are conveyed: it is the organ of the mind, or the place in which the intellectual operations are carried on; and it is the source of volition, or the part from which the determinations of the will are sent to the voluntary muscles. If the brain be found, any part of the body, any limb, any intestine, any organ of sense, even the spinal marrow, may be injured or diseased, without the power of perception, thinking, remembering, willing, &c. being affected. On the contrary, injuries and diseases of the brain suspend or entirely destroy the powers just mentioned. Pressure on its surface, as by effused blood or pus, by depressed bone, by the finger of an experimenter, by tumours, &c. make the individual insensible to all external objects, and incapable of motion, although the organs of sense, the muscles, and the nerves are all found. After a blow on the head, or a stroke of apoplexy, you may pinch or cut the skin, bring a light to the eye, or make a loud noise, and nothing is perceived: the limbs and trunk are motionless, like those of a dead body. Irritation of the organ, as by inflammation, generally increases the sensibility; all impressions on the senses produce a more lively effect: but the mental operations are generally suspended.

The preceding observations apply principally to causes affecting the organ suddenly, as in injuries or apoplexy. When the pressure comes on more slowly, as in hydrocephalus, or in tumours or abscesses produced very gradually, the functions are often not disturbed, although the disease be considerable. Again, the brain has a great power of accommodation; so that sensation and volition, which are at first suspended in apoplexy, gradually return, although the effused blood still remains. When the pressure is removed, when the blood or pus is evacuated, the depressed bone restored to its former level, or the diseased state of the organ remedied, the functions of the senses, the mind, and the will are recovered.

In some cases, injury or disease of the brain is followed by more partial loss of its powers: as loss of speech, sight, hearing, memory, &c. Concussion of the organs has been followed by fatuity, although sensation and volition were perfect: Haller mentions a man, who remained an idiot for eighteen months, from depression of the parietal bone, and recovered when this was removed. (Loc. cit. p. 317.) The instances of particular senses being destroyed, when the brain is compressed or diseased near the origins of their respective nerves, are numerous.

We have shewn, that the impressions of external objects on the organs of sense are conveyed to the brain, and that the cause of motion passes from that organ through the nerves to all the muscles of the body. Some have suspected that



all parts of the organ are not equally concerned in these functions, and that the whole brain is not necessary in the business of sensation: they found that extensive injuries and diseases were suffered, and the individuals nevertheless recovered with entire possession of their senses, memory, intellectual faculties, and volition. This point is most fully established by an immense collection of examples in Haller's great work. (lib. x. sect. 7. § 32.) Hence different physiologists have endeavoured to fix the seat of the soul to some particular spot of the brain: but there is no part, which has not been often found either greatly injured or destroyed by disease, without material affection of the powers of sensation, &c. Thus the corpus callosum, which several anatomists fixed on as the part essential to the functions of the brain, was wounded in animals by Zinn, with no other effects than such as wounds of the brain in general produce: the power of sensation and voluntary motion remained for many hours and days after such injuries. (Haller, loc. cit. § 33 and 34.) Nor is there any more satisfactory proof that the cerebellum ought to be regarded as the organ of the soul, or as essentially necessary to life. The common notion of the greater danger attending injuries and diseases of this part is unfounded; and Haller shews clearly, that both in it, and in the cerebrum, the slighter injuries are not very dangerous, while more serious ones are usually fatal. (Ibid. § 35 and 36.) The pretensions of the pineal gland, centrum ovale, &c. to the honour of lodging the soul, are not more clearly made out.

Pressure or disease on one side of the brain destroys the power of motion in the opposite side of the body, and this kind of paralysis, which attends apoplexy, as well as various injuries and diseases of the brain, is called hemiplegia. The nerves of sensation are not in general affected in these examples, like those of motion: the eye, the ear, the nose, and the tongue usually retain their powers, although the voluntary muscles of the same side are completely paralysed. The skin, too, which is supplied by the same nerves as the muscles, is still more or less sensible. Even those nerves, which are concerned in mere motion, as the 3d, 4th, and 6th pairs, which go to the muscles of the eyes, have their powers but little affected; and this is more remarkable in the sixth or abductors, which originate from the upper part of the medulla oblongata, and therefore may be regarded as similarly situated with the glossopharyngeal and the hypoglossal nerves, both which are affected by pressure on the opposite side of the brain. As all the voluntary muscles of the side are paralysed in hemiplegia, the nerves implicated are those of the spinal marrow, the hypoglossal, accessory, glossopharyngeal, facial, and trigeminus.

In experiments on living animals, the muscles are convulsed on the side which is injured, and paralysed on the opposite side. Sometimes, however, it happens that the paralysis occurs on the same side, and the convulsions on the opposite.

"Denique," says Haller, "etsi plerumque utique in decussatione paralysis post cerebri vitia succedit, non tamen perpetua est alternatio, et exstant exempla non rarissima, in quibus in affecto utique latere musculi resoluti fuerunt, tum in cerebelli abscessu. A fractura cranii paralysis lateris affecti et mors. Post hemiplegium crus medullosum lateris resoluti flaccidum fuit. Ab ulcere cerebri, et abscessu, hemiplegia lateris affecti, tum ex fungo cerebri delapso et cerebro consumpto. A sinu cerebri convulsio lateris alteri, affecti vero paralysis." Loc. cit. p. 333.

It may be inquired whether this paralysis of the opposite side be a circumstance belonging to affections of all parts of the encephalon. The effects of pressure on either hemisphere

in producing paralysis of the opposite side of the body have been noticed by almost every pathological writer since the time of Hippocrates; and hence has been deduced the general law as to the whole encephalon. The preceding quotation from Haller makes it doubtful whether this always happens.

Injuries and morbid changes of the cerebellum are so much less frequently the subjects of observation, than those of the cerebrum, that we cannot speak with much certainty on this point. Morgagni has cases, in which the paralysis was on the opposite side; but Bianchi saw the same side affected.

In the first vol. of the Medico-chirurgical Transactions, Dr. Yelloly has related a case, in which a tumour pressing on the tuberculum annulare caused paralysis of the opposite side of the body, and of the abductor muscle of the eye of the same side, the nerve of which it also compressed.

We cannot explain how this phenomenon takes place: the decussation of the corpora pyramidalia is inadequate to the solution, because a very small part of the chord is involved in that decussation; and, even if this were otherwise, it would only account for the phenomenon in the nerves below the decussation, whereas those above it are equally concerned.

The loss of motion is sometimes partial: the face may be affected, when the limbs are not, and *vice versa*. This, as well as many other phenomena, in which the functions of sensation and motion are disturbed, is quite inexplicable.

For an account of the influence which the brain exerts over the muscles, both of the voluntary and involuntary kinds, see MUSCLE.

Although the sensations, and the voluntary motions are subject to the influence of the brain, and cannot be carried on without that influence, the involuntary organs are very differently circumstanced. When the action of the brain has suffered a complete intermission, as in sleep, and when, consequently, the senses and voluntary muscles are quite inert, the heart still contracts, the motions of the alimentary canal go on, all the secretions and exhalations, and the business of nutrition, are not at all interrupted. Again, when a stroke of apoplexy or depression of the skull has suddenly annihilated the power of sensation and motion, and thus has cut off the connection with the external world, the processes of the internal life still continue, respiration, circulation, digestion, absorption, &c. go on, and support life until the brain has recovered from the mischief. The independence of the heart upon the brain has been placed in the clearest point of view by Mr. Brodie, in the papers which we shall quote presently. This gentleman found that when an animal was pithed, by dividing the spinal marrow in the upper part of the neck, respiration was immediately destroyed, but the heart still continued to contract circulating dark-coloured blood, and that in some instances from ten to fifteen minutes elapsed before its action had entirely ceased. When the head was removed, the divided vessels being secured by a ligature, the circulation still continued, apparently unaffected by the entire separation of the brain. When respiration was artificially maintained, by a pipe introduced into the trachea, after the head had been cut off, the contractions of the heart were maintained for one and two hours, and even longer. The acephalous fœtuses, which attain their full growth in the uterus, and possess all their other organs in perfect size and structure, without a brain, shew that nutrition, secretion, and absorption, are not under the influence of this organ.

The generation of animal heat, which hitherto has been referred to respiration, is very much influenced by the brain.



## NERVOUS SYSTEM.

After dividing the medulla spinalis under the occiput, and the nerves of the neck, or after cutting off the head entirely, Mr. Brodie maintained artificial respiration by means of a tube tied in the trachea. The action of the heart was continued, and the blood underwent its usual change from the venous to the arterial state, and *vice versa*. The air employed in respiration also exhibited the change that occurs in common breathing; *viz.* the removal of its oxygenous portion, and the substitution of carbonic acid gas in its place. Yet the animals on whom these experiments were performed, cooled faster than those which were killed, and exposed to the same temperature. In an experiment on two rabbits of the same size, in which they both had the medulla spinalis divided, and artificial respiration was afterwards maintained in one, while the other was merely left to cool, the thermometer in the rectum stood, at 30 minutes after the operation, at 97; at 60 min. at 94; at 90 min. at 91; and at 100 min. at 90½, in the former; in the latter, the temperatures at these periods were respectively, 99, 96½, 94, and 93.

See the Croonian lecture on some physiological researches respecting the influence of the brain on the action of the heart, and on the generation of animal heat; Philos. Transf. 1811, pt. 1. And further experiments and observations on the influence of the brain on the generation of animal heat; Philos. Transf. 1812, pt. 2.

Towards the end of the latter paper, this gentleman observes, that his experiments "warrant the conclusion, that in an animal in which the brain has ceased to exercise its functions, although respiration continues to be performed, and the circulation of the blood is kept up to the natural standard, although the usual changes in the sensible qualities of the blood take place in the two capillary systems, and the same quantity of carbonic acid is formed, as under ordinary circumstances, no heat is generated, and (in consequence of the cold air thrown into the lungs) the animal cools more rapidly than one which is actually dead." Mr. Brodie's experiments tend to establish the conclusion, "that the influence of the nervous system is not necessary to the production of the chemical changes, which the blood undergoes in consequence of exposure to the air in the lungs. He notices some experiments of Mr. Dupuytren, which lead to a different result. After dividing the nerves of the par vagum, this physiologist found "that the blood returned from the lungs had a darker colour than natural, and that the animals on whom this operation is performed, die sooner or later with symptoms of apoplexy, notwithstanding the air continues to enter the lungs; and hence he concludes, that the changes which are produced on the blood in respiration, are not the result of a mere chemical process, but are dependent on the nervous influence, and cease to take place when the communication between the lungs and the brain is destroyed. Mr. Provençal, in prosecuting this inquiry, ascertained that the animals subjected to this experiment give out less carbonic acid than before. Mr. Blainville observed, that the frequency of the inspirations is much diminished; and Mr. Dumas restored the scarlet colour of the arterial blood by artificially inflating the lungs; and from these and other circumstances, he has arrived at conclusions very different from those of Mr. Dupuytren. My own observations (says Mr. Brodie) exactly correspond with those of M. M. Dumas and Blainville. After the nerves of the par vagum are divided, a less quantity of carbonic acid is evolved, the inspirations are much diminished in frequency, and the blood in the arteries of the general system assumes a darker hue; but its natural colour may be restored by artificially inflating the lungs, so as to furnish a greater supply of air to the blood circulating through them. We may suppose, that on

the division of these nerves, the sensibility of the lungs is either extremely impaired, or altogether destroyed, so that the animal does not feel the same desire to draw in fresh air; in consequence, his inspirations become less frequent than natural, and hence arise the phenomena produced by this operation.

The facts contained in the two papers, Mr. Brodie continues, "go far towards proving, that the temperature of warm-blooded animals is considerably under the influence of the nervous system; but what is the nature of the connection between them? Is the brain directly or indirectly necessary to the production of heat? These are questions, to which no answers can be given, except such as are purely hypothetical. At present we must be content with the knowledge of the insulated fact; future observations may, perhaps, enable us to refer it to some more general principle. We have evidence, that when the brain ceases to exercise its functions, although those of the heart and lungs continue to be performed, the animal loses the power of generating heat. It would, however, be absurd to argue from this fact, that the chemical changes of the blood in the lungs, are in no way necessary to the production of heat, since we know of no instance in which it continues to take place, after respiration has ceased."

Concerning the mode in which the brain operates in perceiving, reflecting, and willing, as about the manner in which the nerves convey the impressions made on the senses to the brain, and the commands of the will from the brain to the muscles, we are profoundly ignorant; not indeed for want of attempts at explanation, for they have been abundant in all ages of physiology; but because the operations are not cognisable by our senses, any more than those which take place in matter, when it exhibits the phenomena of gravitation, electricity, magnetism, &c. We refer those, who are inclined to look over the hypothetic dreams about these matters, to the *Elementa Physiologiae* of Haller. He has wisely separated them, under the title of "*conjecturae*," from the "*phenomena vivi cerebri*;" and he introduces them with the following observation; "*non perinde facile fuerit, ab errore sibi in iis cavere, quæ nunc dicenda supersunt. Eorum pars minima sensibus patet, reliquam ex collectis nudique probabilibus argumentis eruere oportet, quorum tanta fit vis, ut nobis spem faciat ruri, non ea vero constantia, ut ad alium convincendum sufficiat. A nervis facimus hujus dubii sermonis initium.*" Lib. x. sect. 8.

From the experiments of Mr. Brodie, which we have related above, it appears clearly, that the brain exerts no immediate influence on the heart and lungs; but that those organs continue to execute their functions, when artificial respiration is employed, for some hours after the brain has been removed. The brain, however, has the means of influencing the lungs, as it is necessary to the action of the muscles employed in respiration; and through the lungs it affects the heart. For a particular account of the mode in which these three important organs act on each other, in producing death, see **DEATH, HEART, and LUNGS**. We have only to add here, the manner in which, according to Bichat, the phenomena of general death succeed, when it begins in the brain. 1. Annihilation of the action of the brain. 2. Sudden cessation of the sensations and voluntary motions. 3. Paralysis of the diaphragm and intercostal muscles. 4. Interruption of the mechanical phenomena of respiration, and consequently of the voice. 5. Interruption of the chemical phenomena. 6. Passage of black blood into the system of red blood. 7. Retardation of the circulation by the contact of this blood with the heart and arteries, and by the absolute immobility of all the parts, particularly



ticularly of the chest. 8. Death of the heart, and cessation of the general circulation. 9. Interruption of the organic life, particularly in those parts which are habitually penetrated by black blood. 10. Abolition of animal heat, which is the produce of all the functions. 11. Termination of the action of the white organs, which die more slowly than other parts, because their fluids are more independent of the general circulation.

The application to the stomach, or rectum, or to the surface of a wound, of various poisons, causes death by their action on the brain. Opium, alcohol, essential oil of bitter almonds, empyreumatic oil of tobacco, and juice of aconite, are of this number, and probably many others. Life may be prolonged by keeping up respiration artificially in these cases; and in some instances this process has enabled the animal to recover from the effects produced on the brain. Of mineral poisons, arsenic, emetic tartar, and muriate of barytes, act on the brain, but they act also on other organs. For further particulars on these subjects, and especially for an account of the very interesting researches of Mr. Brodie, contained in the Philosophical Transactions for 1811 and 1812, see POISONS.

*Of the Nerves.*—These organs have generally been regarded by anatomists as all of one kind, both in structure and functions; they have been considered every where as designed to establish a communication, for the purposes of sensation and volition, between the brain and the organs of our body. More accurate inquiry shews, that there are numerous differences of colour, strength, form, and interior organisation between the particular nerves; and the analogies furnished by the lower orders of the animal kingdom, lead us to doubt whether some of them depend at all on the brain in the execution of their functions. These circumstances are considered at greater length in the preceding review of the doctrines of Gall. We have to notice here, the arrangement of Bichat, which, although not rigorously correct, points out a broad general distinction of the nervous system, in respect to some of its leading phenomena. He divides it into two parts, having for their respective centres; one, the brain and its dependences; the other, the ganglia. The former, belonging to the animal life, consists of the encephalon, medulla spinalis, and nerves connected with those organs, and is the agent by which external impressions, destined to produce sensations, are transmitted to the brain, and by which the volitions emanating from the latter organ are conveyed to the voluntary muscles. The latter, including the ganglia and the nerves belonging to them, is almost every where distributed to the organs of digestion, circulation, respiration, and the secretions, belongs to the organic life, and executes a much more obscure office than the other. He calls the first the nervous system of the animal, and the latter, that of the organic life. The cerebral nerves, however, send some branches to the glands, involuntary muscles, &c.; while filaments from the ganglia proceed sometimes to voluntary muscles. Again, the numerous nerves included under each of these classes differ from each other in many respects.

The nervous system of the animal life is symmetrical, like all the organs of this life; but the correspondence of the two sides is not always rigorously exact. A line drawn through the middle of the brain and spinal marrow, would divide them into right and left similar halves, and corresponding nerves would be connected with each of them. Hence arises the expression "pair of nerves," which denotes the corresponding trunks of the right and left sides; an expression, which, in general, is inapplicable to the nerves of the ganglia. We may state then that there are two animal nervous

systems; a right and a left, separated by the median line. The distinction is rendered apparent, not only by dissection, but by diseases: one half of the body may be paralysed, or subjected to convulsions, while the other is unaffected.

*General Account of the Origins, Course, and Distribution of the Nerves.*—When we speak of a nerve arising or deriving its origin from the brain and spinal marrow, running, passing, or proceeding through various parts, dividing into branches, being continued, prolonged, or separated, having a serpentine course, &c. these expressions are employed merely for the purpose of describing position and connection, of pointing out the mechanical arrangement of the parts; and not to express any succession in the formation, or any dependence of one organ on another. There would be just as much propriety in describing the olfactory nerve to arise or begin at the pituitary membrane, and to end in the brain, as in the ordinary method, in which this order is inverted. That the nerves, which are connected both to the brain and medulla spinalis, are formed quite independently of those parts, is evinced by the instances of monstrous fetuses, in which these organs are wanting, yet the different nerves are perfect. See MONSTER.

The origins of the nerves are very different; and the nerves themselves exhibit very different appearances in their commencements. The third, fourth, fifth, and facial nerves adhere so slightly to the brain at their connection with its surface, that a very little force detaches them; the other cerebral nerves are more strongly connected, and those of the spinal marrow are firmly attached to that organ. Some arise by numerous threads, which may either come off separately, or in one body; others by one mass of white substance. Some are very soft, others firm, &c. The dura mater lines the foramina, through which they proceed from the skull; the arachnoid forms a process surrounding each nerve, and is then reflected to the dura mater. The length of the nerves within the cranium and the vertebral canal, and their direction, are various. All these points will be more minutely considered in the description of the particular nerves.

Some of the nerves of the brain proceed to their respective organs without communicating with any other nerve; *e. g.* the olfactory, optic, auditory, trochlearis. The par vagum, glossopharyngeal, accessory, and hypoglossal nerves are joined, immediately on leaving the head, to the surrounding trunks. But these communications are the most remarkable in the spinal nerves; the cervical, brachial, lumbar, and sciatic plexuses result from these unions. A similar kind of plexus is formed by the constituent nervous filaments of each trunk. If you examine the cords that make up a large spinal nerve, and separate them, you will find that they are not simply applied laterally to each other, but that they frequently interchange branches. Each cord of a nervous trunk consists of filaments, some of which are frequently detached from one cord and go to another. In both the kinds of communication now described, there is simply juxtaposition of the nervous trunks or filaments, and not confusion of them.

After forming the communications just described, the nervous trunks separate from each other, and proceed to their respective organs, passing through the cellular interstices in a longer or shorter course. Their form is generally round; but it may be flattened, as in the sciatic. This does not seem to influence their functions; as a naturally round nerve flattened by a tumour performs its functions in the usual way. The trunks vary in length, according to the distance of the parts to which they are distributed: sometimes they go with the arteries and veins; sometimes



alone. As they proceed, they send off branches, which produce others, and so on until they are reduced to very fine twigs, that can hardly be traced by the naked eye. The angles of these divisions are very various; but the acute is the most common. At these branchings a certain number of cords or twigs is separated from the trunk: hence the former are longer or shorter in proportion as they arise later or sooner from the nerve. In the limbs most of the nervous branches are accompanied by an artery and a vein: but there are many exceptions to this rule in the head and trunk: so that we cannot attach any importance, in the functions, to this juxtaposition.

The small branches end in two different ways: they communicate with other nerves, or are lost in the organs.

The communications already noticed are simple juxtapositions: the filaments of one nerve join another, and concur with them in constituting the trunk. This is the most common kind of connection. But there is another, analogous to the anastomoses of blood-vessels, in which two branches from two distinct nerves meet and join together. This is seen in the union of the hypoglossal and cervical, of the facial and infraorbital. Here the nervous filaments are continued into each other. The different branches of the same nerve may communicate together, as in the trigeminus. It is said that the right and left pairs are joined at the median line in the chin and neck; but it is not easy to demonstrate this.

The nerves of the animal communicate with those of the organic system.

The terminations of the nerves in the organs present considerable varieties: the skin, muscles, and mucous systems have many nerves; the cellular and glandular systems fewer. In the serous, medullary, and part of the fibrous system, we know little of them. Tendons, cartilage, hair, epidermis, &c. have none.

We do not know what form the nerves assume at their terminations; whether they lay aside the neurilema, so as to form a pulpy expansion, or not. The former is evidently the case with the optic and auditory nerves.

*Organisation of the Nerves of the Animal Life.*—We have only a few points to add to the general account in the article BRAIN.

The threads composing a nervous trunk differ in size in the different nerves: in the sciatic and crural they are more slender than in the brachial nerves. Some, as the nervus vagus, consist of a single cord marked with grooves. The cords may be of uniform or of different size. The optic does not exhibit that interior intertexture which we have mentioned above. These, and many other circumstances, which have been chiefly noticed by Reil, shew that there are great differences in the internal arrangement of the nerves; that each hath something peculiar, and, consequently, that they cannot be compared to arteries or veins, which are alike every where.

"The neurilema, says Bichat, forms to each nervous filament a true canal containing the medullary substance, as the veins and arteries contain blood, with this difference, that the former stagnates, while the latter circulates."

This membrane is continuous with that covering of the medulla spinalis which is called its pia mater. Hence, if the medulla be squeezed out of the spinal marrow, the nerves remain connected to its pia mater. A similar connection seems to subsist in the head; for the nerves are generally torn away when the pia mater is detached. The optic before its junction and the olfactory have no neurilema; the former acquires the covering after the union; the canals are particularly large in it, and the medullary substance

therefore abundant. The neurilema bears considerable analogy to the pia mater. Arising in the way we have mentioned, it accompanies the nerves in their passage through the foramina of the head and vertebral canal. It is of the same nature on the outside as within, but it is here surrounded by cellular substance.

The neurilema exhibits the phenomenon of crispation or corrugation in a very remarkable degree, particularly on immersing a nerve in tolerably strong sulphuric or nitric acid. The nerve is immediately contracted in size, and twisted in different directions. Boiling water has an analogous effect. But continued ebullition or immersion in acid softens it and produces a yellowish tint; at last it is almost dissolved. Water hardens it at first, and this effect lasts for a month and a half: the nerve is afterwards softened, like all other animal tissues.

The density of its tissue renders it very strong: hence, a slender nerve will bear a great weight, because this membrane composes a considerable part of the whole cord.

The medullary substance is very abundant in the optic nerve; also in the auditory. It composes the whole of the optic behind the junction, as well as the entire olfactory nerve within the cranium. In the latter cavity, the medulla of the nerves in general seems to predominate over the neurilema; while on the outside these proportions are reversed. Hence the nerves are weaker within the skull than without.

The great power of the nerves to resist gangrene during life, and putrefaction after death, seems to be owing to the neurilema. The water, in which they are macerated, has very little fetor; while that of the brain is very offensive.

The medullary substance of the nerves or brain is not susceptible of corrugation by acids or hot water; but, in consequence of the contraction of the neurilema, the medulla is expressed from the cut end, so as to form a small rounded tubercle.

Bichat enters at considerable length into a parallel between the medullary substance of the nerves and of the brain; and exposes, in a comparative view, the effects of different chemical agents on each. The result of the whole is, that there is great general resemblance; but the great proportion of neurilema in most of the nerves occasions them to exhibit very different phenomena from the brain under the application of chemical agents.

The nerves have no cellular substance on the inside of the cranium and spine; but contain much of it in other parts. A copious stratum usually connects them to the surrounding parts. The same tissue joins together the different cords of the nerve; and this generally contains fat in the large nerves, always in the sciatic, as may be shewn by drying them. A finer kind of tissue connects together the minute filaments.

We have no remarks on the blood-vessels of the nerves to add to what is stated in the article BRAIN. The function of nutrition proves the existence of exhalants and absorbents. Bichat doubts the correctness of the opinion, which assigns to the neurilema the office of secreting the medulla of the nerves. He conceives that this membrane supports and protects the medullary part; that the vessels are first minutely ramified in it, and then enter the latter substance, as those of the brain are disposed on the pia mater before they go into its substance: and that these interior vessels in both cases deposit the materials of the organ. He observes, that the olfactory, and a part of the optic nerve within the cranium have no neurilema.

*Properties of the Nervous System of the Animal Life.*—A nerve possesses very little extensibility; when force is applied



plied to it in a living animal, it can hardly be stretched beyond its natural state. This is probably owing to the neurilemma, for the medullary substance undergoes a great extension in hydrocephalus. When a large nervous trunk is pressed on by a tumour, its fibres are separated, and it assumes a flattened form; in which state, according to the degree of pressure, it either continues or ceases to transmit sensations and volitions. Sudden distention acts much more efficaciously in interrupting these functions, than that which comes on gradually. Thus the pressure of the head of the bone in dislocation of the humerus causes numbness of the limb, when a much more considerable tumour in the axilla has no such effect. A slight depression of the cranium from a fracture disturbs all the functions of the brain, when large swellings, funguses, &c. of slow growth hardly exert any sensible operation. A similar contrast is seen in the sudden effusion of a little fluid in the ventricles, and the enormous collections of chronic hydrocephalus.

There is still less contractility: when a nerve is cut transversely, the two ends are hardly separated.

The sensibility of the nerves is to be considered under two points of view: 1st, that which is inherent in them; 2dly, their concern in the sensibility of other organs.

The effect produced in the mind, when any foreign body acts on our organs of sense, or on any parts of the frame possessing nerves; or when certain internal changes of an unknown nature are produced in our organs, is called a sensation. The nature of the mind being unknown to us, as well as the impressions, actions, motions, or whatever they may be, of the nervous system, which produce mental phenomena, we cannot arrive at a more close definition or description of sensation than what we have just given. "*Sentire hic dicimus,*" says Haller, "*populari omnino significatione ejus vocis usi, quamcunque mentis nostræ mutationem, quæ ex corporis humani cum mente connexi contactu oritur.*"—"Sentit adeo nervus, nempe si a corpore quocunque contingatur, nascitur in anima mutatio, per quam ejus contactus conscia redditur." (*Elem. Physiol. lib. x. sect. 6. §. 1.*) This effect is caused not only by the contact of the grosser kinds of matter, but also by those, of which the existence is not immediately obvious to the senses: such as light, electric fluid, the air and its modifications producing sound, &c. According to the violence of the impression, the state of the organ, &c. sensations may be pleasurable, painful or indifferent.

Generally, the body causing a sensation is not in immediate contact with the nerve. The surface of the body has an insensible external covering. The nerves of the teeth feel through the substance of these organs. In the eye and ear there is a large apparatus between the nerve and the part impressed: in the nose and mouth the surface is covered by mucus. These media are necessary to some kind of sensation: when the cuticle is removed, acute pain is felt by the contact of foreign bodies, but their properties are not discerned. If the tongue be made quite dry, tastes are not perceived. Again, different alterations in the condition of the organ modify the sensation: the slightest contact is acutely painful, when a part is inflamed; the stream of water is not felt in the healthy urethra, but is intolerably painful when that canal is inflamed, &c.

The different nerves are affected by different kinds of impressions; and each is insensible to those which act on others. Light is perceived only by the optic; it affects no other nerve in any form. The loudest sound produces no sensation in the nerves of the eyes, tongue, skin, &c.

Animal sensibility is the most strongly marked property

in these organs: the acutest pain is produced, when they are exposed and irritated, as on a blistered surface, or by tying, stretching, pricking, cauterising, or applying chemical stimuli to denuded nerves. We cannot hesitate much in referring this sensibility to the medulla of the nerves; for simple contact, without any pressure, is hardly painful, and the filaments may be actually separated in a large nerve, by very careful dissection, with little pain to the animal. But the moment that the instrument penetrates, acute pain is produced.

This property of animal sensibility is gradually exhausted by repeated excitement in experiments; and then is renewed after some interval of rest. The animal sensibility of the nerves is different in its kind from that of other organs; at least, the feelings produced when these organs are the source of disorder are altogether peculiar. This is seen in the *tic douloureux*; in the sciatica, as compared with rheumatism; and in the tingling and numbness caused by pressure on nervous trunks, as in the familiar example of the foot going to sleep when the great sciatic is compressed, &c.

Another peculiarity in the nerves is, that local irritation of a trunk often affects all the branches; if the ulnar nerve is struck or compressed at the elbow, we feel it in the fingers, and the whole leg and foot are affected when the sciatic is compressed in sitting. When a superficial nerve is injured, the whole lower part of the limb frequently swells and becomes painful. A ligature has not the same effect; for that intercepts the communication with the brain. Why is this disturbance always propagated downwards, and never towards the brain, which is the ordinary course of sensation? In the arterial, venous, absorbing, mucous systems, &c. we have no examples of this propagation of irritation.

The nerves are essential to the animal sensibility of the other organs; external impressions, whether of that general kind common to all the external surface of the body, or the particular ones confined exclusively to the organs of sense, produce no effect, unless the nerves are sound and communicating with the brain. If the optic, auditory, or any other nerve be compressed, tied, divided, or in any way considerably injured, light or sound will cause no sensation, although the organ and the brain may both be in a perfectly natural state. If all the nerves of a limb be cut or tied, the skin may be pinched, pricked, burned, or irritated in any way without sensation being produced. Nothing is more acutely painful than the irritation of a nerve; let the trunk be cut through or firmly tied, and you may irritate it beyond the point of division or ligature (that is, in the portion of which the continuity with the brain is interrupted) without the animal feeling what is done. If a divided nerve should unite again, or the ligature be removed from a tied nerve (supposing it should not have deranged too much the texture of the part) the power of feeling is restored.

The organs of the senses possess the general power of feeling, as well as the particular faculty of receiving and transmitting the impressions from their respective external agents. Now the latter may be lost, while the former continues unimpaired; the eye may be insensible to light from injury or disease of the optic nerve; yet it is still susceptible, like the external surface of the body in general, of the impressions of heat and cold, hardness and softness, &c. The sense of smelling is lost in a cold, while the general feeling remains, &c.

We may then lay it down as a general position, that the nerves are necessary to all the external sensations, of what-



ever kind they may be. All the organs, with which external objects can come in contact, as the skin, the beginnings of the mucous surfaces, and the organs of sense, are more or less abundantly supplied with cerebral nerves. None derive any nerves from the ganglia. This division of the nervous system of the animal life is very considerable: when to this we add what is employed in supplying the voluntary muscles, there is very little left.

Whether the impressions producing internal sensations are all conveyed to the brain by the nerves, is a more doubtful point: the phenomena here are more obscure. We find also, that parts with few nerves have acute sensibility, that others with a considerable portion of cerebral nerves have little or no feeling in the natural state; we must, therefore, hesitate in admitting that the nerves are the only media by which impressions producing sensations can be conveyed, and that the acuteness of feeling is always proportioned to their number and size.

The concurrence of the brain is essential in these internal sensations, as well as in the exterior ones. However the internal organs may be affected, the action of opium, wine, &c. on the brain, will suspend all sensation.

Some organs have the most exquisite sensibility, yet possess hardly any perceptible nerves: such is the medullary membrane of the long bones. The liver and lung, which receive nerves from the brain, may be irritated in living animals, without signs of pain being produced. The voluntary muscles, which have so many and large nerves, may be cut or irritated with very little pain, if the actual nervous ramifications are avoided. Ligaments, which have no nerves, when twisted or distended cause considerable pain. Tendons, aponeuroses, ligaments, and all other organs, which receive no visible nerves, are acutely sensible when inflamed.

This question concerning sensibility engaged Haller in a long and laborious controversy. He subjected the different textures and organs of the body to experiment in living animals: he cut, pricked, compressed them, applied chemical stimuli, as acids, alkalies, &c.; and inferred that the parts were insensible, when the animals gave no signs of pain. In this way he determined that tendons and aponeuroses, ligaments, bones, membranes of all kinds, as the peritoneum, pleura, peritoneum, &c. are insensible; and that the viscera have only an obscure sensibility. This, however, is too limited a view of the subject: disease often develops in these supposed insensible organs the most exquisite power of feeling. The epidermis, hair, and nails, and the substance of the teeth, are the only parts which can be stated with certainty to be insensible; but we cannot trace any nerves into the following organs, *viz.* the bones, cartilages, tendons, ligaments, membranes, fat, and the medulla of bones, the secundines, the cornea, crystalline lens and humours.

The nerves have no perceptible motion, but they are essential agents in those movements of the voluntary muscles, which depend on volition. When they are cut, tied, or severely injured in any way, the muscles no longer obey the will. See the article **MUSCLE**.

How do the nerves transmit impressions and the determinations of the will? What is the manner in which their influence is exerted? "The opinions of physiologists," says Bichat, "have been much divided on these points. Some have admitted a kind of vibration in the nerve, some talk of impulse, some of action, some speak of a fluid contained in tubes in the nerve, others of an insensible fluid not held in any visible canals. The latter hypothesis is still very generally upheld; and long discussions are maintained

whether it be of an albuminous, electric, magnetic nature, &c. In most treatises of physiology, the chapter on the nerves is principally occupied with such discussions, which I shall not enter into here, because we have no data concerning it founded on experience. Moreover, cannot we study and analyse the phenomena connected with the nerves, without knowing their mode of action? All the old physiologists committed the error of wishing to begin at the point, in which some day or other we may be able to end. The science was still in its cradle, when all the discussions were directed to the primary causes of the vital phenomena. What was the result? Long trains of unsubstantial reasoning, and a necessity to come at last to the rigorous study of phenomena, leaving that of their causes, until we have collected observations enough to form the basis of theories. In the same way, the nature of light, fire, heat, cold, &c. was discussed for centuries, until at last philosophers found out that they wanted bases for their reasonings, and thus created experimental philosophy. Endless disputes agitated the schools about the soul, the judgment, &c. before metaphysicians discovered, that instead of attempting to discover the essence of the intellectual faculties, they ought to employ themselves in analysing their operations. Each of the natural sciences has had two periods: the first, in which first causes were almost the only object of investigation; the second, when experience and observation were relied on for disclosing the phenomena. Physiology has still one foot in the former, while she has placed the other in the latter: the physiologists of the present day must make her complete the step." *Anat. Gener. t. i. p. 175.*

The organic properties exist in the nerves in a low degree: they are merely subservient to their nutrition. Hence all the principal diseases of these organs affect their animal sensibility: tumours, funguses, ulcerations, &c. are very rare.

When the power of transmitting sensations and motion is lost, nutrition still goes on, and the nerves remain as large in a paralysed as in a healthy limb. Perhaps they may be diminished in size, when the whole limb begins to be reduced. We know nothing of any changes in these organs, after long continued painful diseases, as cancers, &c. Bichat has examined them in cancer of the stomach and uterus, without finding any change.

The cerebral nerves do not seem to exert any influence over the organic properties of other parts: and hence the leading distinctions between the animal and the organic sensibilities. In the capillary circulation, in secretion, exhalation, absorption, nutrition, the fluids make on the solids an impression, of which we are not conscious, and by virtue of which the latter re-act. The influence of the cerebral nerves does not seem to be essential in any of these cases.

Capillary circulation goes on in cartilages, tendons, ligaments, which possess no nerves. These parts are as much liable to inflammation, as those which have large or numerous cerebral nerves. Indeed the tongue and the retina are parts seldom inflamed; while in the cellular tissue and serous membranes, which have very small nerves, the capillary circulation is brought into increased activity very frequently. In paralytic limbs, as in animals where the nerves have been cut, the capillary circulation goes on as usual; inflammation, ulceration, &c. may take place.

That the exhalation from the skin is independent of the cerebral nerves, is proved under the article **INTEGUMENTS**. In the synovial and serous membranes, and in the cellular tissue, exhalation constantly goes on; but the nerves are very few, if any. Irritation of the nerves, brain, or medulla



dulla spinalis, has no influence on the exhalations. The same observations hold good of absorption, which, as well as the exhalations and secretions, goes on in sleep, when the action of the brain and voluntary nerves is intermitted. On the subject of the secretions, see GLAND.

Nutrition is carried on in parts that have no cerebral nerves; and it goes on in limbs completely paralysed.

The nerves have some influence, of a kind and degree not yet clearly ascertained, on the production of animal heat. The ligature of a nerve, in an operation, will produce a general sense of cold in the limb: the little finger and ring-finger remained constantly colder than the others, after the ulnar nerve had been divided at the pisiform bone. Compression of the nerves, as by the head of the bone in luxation, produces analogous effects. The temperature of the affected limb in hemiplegia is below that of the sound one, although there is no perceptible difference in the pulse. Yet the heat is not always increased, when the activity of the nervous system is augmented; nor, *vice versa*, does it experience decrease, when that is diminished. The cases in which it seems independent of that system are as numerous as the others.

*Sympathies*.—We have to consider here the relations of the nerves to each other, and the share which they have in the sympathies of other organs.

1. Sometimes the two nerves of one pair sympathise; that is, when one is affected from any cause, the other becomes disturbed without any obvious reason. This is seen in the eye frequently. Or, an injury of one nerve may be attended with disorder of another on the same side of the body, either belonging to the same trunk, or to one entirely distinct.

The nerves, when disturbed, may affect other organs: thus, in tic douloureux, there are pains in the head and other parts. When a nerve is irritated, many muscles are thrown into convulsion, besides those which receive their supply from the irritated trunk. Vomiting and increased action of the heart often attend attacks of nervous pains; and irritation of the nerves, in living animals, may cause vomiting. Again, these parts may be sympathetically acted on by various organs: hence the pains, particularly of the limbs, in various acute and chronic affections.

2. Authors have been much divided in opinion concerning the causes which produce sympathies. How can an organ, which has no obvious relation or connection to another, act on it, so as to produce in it very serious disturbance, for no other reason than because it is affected? This singular phenomenon often occurs in health; but the instances are so numerous in disease, that, if we take from every affection what does not depend immediately on the disorder of the function particularly disturbed, diseases would be reduced to a state of simplicity very favourable to their study and treatment. But no sooner is one organ affected, than many or all the others seem to feel the attack. Most authors have regarded the nerves as the general medium of communication in these cases; and the communications have been considered as an arrangement connected with this object. Some consider that the brain is always affected in an intermediate manner; others do not see the necessity of this. The communications of organs by means of the blood-vessels, or by the cellular tissue, or the continuity of mucous surfaces, have all been adduced in explanation of the phenomenon. None of these are supported by sufficiently strong arguments, to induce us to consider them at length; and they are all exposed to the objection of placing the subject in too general a point of view.

Bichat observes that sympathies may be divided into as

many kinds as there are different vital properties, and that these may be excited in different ways. When the animal sensibility of an organ is sympathetically excited, this does not always depend on nervous communications: for the part, in which the primary affection occurs, may be one not supplied with nerves, as a tendon, cartilage, &c. and consequently cannot communicate with that in which the pain is felt by means of nerves. Again, it is uncertain whether the nerves are the only media for conveying internal sensations. This author considers that the brain produces these sympathies; that the power of perception is disturbed; that there is an "aberration of the internal sentient principle, referring to one part a sensation of which the cause exists in another." Thus, when the end of the nerve is irritated in a stump, pain is felt in the amputated limb; a stone in the bladder causes suffering in the glans penis. Perception is subject to numerous irregularities, which have not yet been analysed with sufficient accuracy.

When the voluntary muscles are thrown into convulsions in sympathies, we conceive that the nerves are essentially implicated, according to the views which we have presented of the dependence of the animal contractility on those organs. (See MUSCLE.) The affected organ must act on the brain, which re-acts through the nerves. If the latter are divided in the limb of an animal, the muscles are not thrown into convulsion by irritations; that would otherwise certainly produce this effect.

The brain and nerves cannot be the agents of communication in sympathies, where irritability, or, according to Bichat, the sensible organic contractility, is concerned; because the former has no power over the involuntary muscles. In cases, then, where the heart, stomach, or other internal organs, are sympathetically affected, we must acknowledge our ignorance of the mode in which this is brought about.

The same observation may be applied to the sympathies of the organic sensibility and insensible contractility. The nerves have no influence over these properties; by acting on these organs, you neither increase nor diminish the functions over which they preside; and these are equally free from disturbance in diseases of the nervous system. Hence the sympathetic exhalations, as phthical sweats and serous depositions; the secretions and absorptions of a similar nature, which occur frequently in disease, are evidently out of the influence of the nervous system of animal life. The cellular and vascular influences are equally inadequate to a solution of the phenomenon. What positive datum can we rely on, in explaining, by these means of communication, why sweats occur when the lung is diseased, why saliva is poured into the mouth when the membrane of the palate is irritated, &c.

"The result to be collected from the preceding observations," says Bichat, "is, 1st, that the sympathies of the animal sensibility are, in most cases, an aberration of that principle in us, which perceives, and which is deceived concerning the place in which the causes of our sensations act. 2dly. That the sympathies of the animal contractility require the intervention of the brain; and that we do not know how the part affected acts upon that organ, although it is clear that the nerves are the media by which it re-acts on the muscles. 3dly. That the causes of the two kinds of organic sympathy are absolutely unknown."

We must observe here, not to confound the natural connection of phenomena with sympathies. In syncope; apoplexy, and asphyxia, the heart, brain, and lung are respectively affected, and their functions suspended. This produces, as a natural consequence; suspension of action in all



other parts. But the case is quite different in sympathies. When the functions of the skin are interrupted, the lungs, stomach, or intestines may be affected. The sympathetic phenomena either may or may not be exhibited; whereas, in the preceding cases, the suspension of all other actions follows inevitably that of either the heart, brain, or lungs. On the reproduction of the nerves, see the article BRAIN.

*Progressive Development of the Nervous System of the Animal Life.*—The brain is of a very large size, in comparison to the rest of the body, from the earliest periods of gestation. Its size, indeed, in the first months, is monstrous, in comparison with its relative bulk in an adult. It is soft, and even semifluid at this time; and the two component matters are much less distinct than they will be afterwards. The nerves are also very large. The latter organs present an appearance just the reverse of what takes place in the arteries. The size of those vessels is in proportion to that of the organs; while, on the contrary, the small organs of the fœtus have very large nerves.

There is every reason to suppose that the brain and the nerves of the animal life, although so large, are quite inactive in the fœtus. The body may be completely formed, and arrive at its full size, although the brain be deficient.

At the time of birth, the brain is excited by the circulation of red blood in its arteries, as well as by the impressions of surrounding objects on the organs of sense. The former circumstance is essential to the performance of its functions, which either do not begin at all, or only in an extremely feeble manner, and for a very short time, unless the lungs begin to act, and thus cause the proper change in the blood. Long after birth, and even during the whole period of growth, the nervous system, and the brain, which is the centre of it, predominate in their development over the other parts. But this predominance is gradually diminished until the time of puberty, when the generative organs assume the primary importance in the system.

The novelty of every thing which surrounds the infant, keeps his nervous system in constant action; and hence it requires longer, and more frequently repeated intervals of repose. The numerous sensations of the child lead to frequency of motion. The great development, and constant exercise of the nervous system in the child, expose it to the action of causes that produce disease. Slight pain will produce convulsions, and disturbances of this system are the predominant affections of this age. The structure of the brain is frequently affected, as well as its functions; as the occurrence of funguses, hydrocephalus, spina bifida, &c. demonstrate.

When the growth is completed, the brain and nerves have arrived at their just proportion to the other systems, and their functions are then in equilibrium with those of the other organs.

As old age advances, the functions of the nervous system are gradually diminished. The sensations are less lively, both because long habit has rendered them familiar, and because the perceptive power of the nerves is blunted. As the nerves transmit fewer and less acute sensations, the brain has less to perceive; and the motions are consequently diminished. Changes of structure coincide with these changes in the functions. The brain, which was so soft in the fœtus, is very firm in the old subject; it is less red, and has a more tawny colour. The nerves also grow harder; but the disproportion in point of firmness between the two ages is not so remarkable in these as in the brain. It follows from these circumstances, that pain is less acutely felt by the old. As age advances, partial losses of power often occur in the nervous

system; and hence hemiplegia, which are very common in the aged.

*Nervous System of the Organic Life.*—There is an obvious difference in structure between the nerves just described and those which belong to the present division; and there are no less striking differences in the functions of the parts to which the two kinds of nerves belong. The arrangement of Bichat is well calculated to shew these distinctions; although, as we have already observed, they cannot be applied rigorously and satisfactorily throughout the nervous system. The ganglia of the spinal nerves, which belong to organs of animal life; and the branches of organic nerves, distributed in some cases to parts of voluntary motion, interfere with the arrangement.

Bichat regards each ganglion as a particular centre, independent of the others in its action, furnishing or receiving its particular nerves, as the brain furnishes or receives its nerves, and only connected with the animal nerves by communications. Hence, while the brain is the common centre in the animal life, to which all sensations are conveyed; and from which all motions proceed; there are as many particular centres, and as many small secondary nervous systems in the organic life, as there are ganglia. He observes that all anatomists, even those who, without attributing any precise meaning to the expression, have called the ganglia small brains, have regarded these bodies as dependencies, or swellings of the nerves, in the course of which they are found; and, as they mostly occupy the great sympathetic, they have been represented as a distinguishing character of that nerve. But that nerve cannot be said to exist, according to the view which he gives of the ganglia; and the continued cord, which may be traced from the neck to the pelvis, can only be regarded as a series of communications between the ganglia.

The following were the considerations that first induced him not to regard the sympathetic as a nerve like others, but merely as a series of anastomoses. 1. The continuity is sometimes interrupted, particularly between the last thoracic and first lumbar ganglion; sometimes two adjoining ganglia in the loins or sacrum have no communication. 2. Cuvier has found that the superior cervical ganglion is always insulated in birds: and in many other animals there are interruptions in the series of ganglia composing what is called the great sympathetic nerves. 3. The ganglia sometimes communicate by two or more branches, which is a different disposition from that of the cerebral nerves. 4. What can be called the origin of this nerve? is it the sixth pair? But the cerebral nerves decrease in size as they become more distant from the brain, and the case would be reversed in the sympathetic on this supposition. Does it arise from the spinal marrow? then the branches produced in one region would come from the branches furnished by the spinal marrow in that region. But the splanchnic nerves are much larger than the branches from which they must be supposed to arise on this supposition.

The properties of these are also different from those of the cerebral nerves; they do not transmit sensations, nor have they any concern in voluntary motion; they are distributed only on the organs of the internal life. Hence they are concentrated in the trunk, particularly in the chest and abdomen: hardly any are found in the head, where nearly all the organs belong to the animal life; and none in the limbs, which belong exclusively to this life.

As the ganglia and their nerves are distributed generally to the organs of the internal life, they partake with them in their want of symmetry, and they are exposed to numerous varieties in number, form, &c. This, indeed, is not a very



a very rigorous distinction between the two nervous systems; there is as great a want of symmetry in the par vagum as in the sympathetic.

From the view which we have given of the opinions of Gall, it will be seen that that anatomist nearly coincides with Bichat in his notions about the ganglia and the great sympathetic nerve.

*Ganglia.*—A general account of these bodies is given under the article BRAIN, and in the view of Gall's doctrines. We have some particulars to add.

The greatest number of these bodies is found along the vertebral column, where we see, in regular succession from above downwards, the cervical, dorsal, lumbar, and sacral ganglia, which, with their communicating nervous branches, form the great sympathetic nerve of most anatomists. Besides these, the head contains the ophthalmic or lenticular, the sphenopalatine, and the maxillary; the oval swelling of the olfactory nerve, and the ganglion Glaseri of the nervus trigeminus, both placed within the cranium, do not resemble the other ganglia in many points. There are the cæliac or splanchnic ganglia in the abdomen; and sometimes a small one at the basis of the heart in the chest. The posterior root of each spinal nerve swells into a ganglion as it is passing out of the vertebral canal. The bodies thus formed are acknowledged by Bichat to have the greatest analogy to the other ganglia, yet they are situated on nerves of the animal life.

Some ganglia are found constantly, others are only accidental; in the hypogastric plexus, and in the middle of the neck, there is sometimes a small ganglion. The maxillary, or some of the lumbar or sacral ganglia, sometimes do not exist.

They are generally deeply seated, so as to be protected by their situation from external injury: this circumstance renders it difficult to make experiments on them, and will therefore prevent us from clearing up the obscurity in which their functions are enveloped. They possess all kinds of figures; and the individual ones vary greatly in this respect in different subjects.

Very different views have been given by anatomists of the internal structure of the ganglia; this may have arisen in some degree from actually existing differences in the organs. In the oval swelling of the olfactory nerve, we can distinctly see medullary fibres involved in and separated by cortical matter. The fibres of the nervus trigeminus are expanded and separated, and mixed with many blood-vessels, in the gangliform swelling of that nerve. Neither of these has any firm general exterior investment. In the other ganglia we find a loose cellular substance round them, and this seems to be condensed into a closer stratum, which is soft, thin, and tolerably smooth on the surface; it has no analogy to the neurilema. This covering is thicker in the spinal ganglia, and those of the neck, than in other situations. Scarpa and Soemmerring consider the ganglia to be formed by an expansion of the nervous filaments, which are separated into very small threads, interwoven and mixed with a peculiar vascular substance; and assert that the structure becomes manifest, by dissecting these bodies after they have been macerated for some time. "Filis nervorum, noti plicati habitus, in ipsis gangliis massa quædam mollis, succulenta, purpurea, lutea, vel cinerea, vasisque plena, telæ cellulose filis, in ganglio nervi olfactus vero massa cerebri constans interponitur." (De Corp. Hum. Fab. t. iv. p. 148.) These anatomists state, that the nervous filaments pass directly through the ganglia, although separated from each other, and mixed with others; that the different nerves connected with a ganglion have their component fibres so intermixed, that they

may be all said to communicate with each other; that the nervous fibres may sometimes be seen running over the surface without mixing with the mass; and that the nerves going from a ganglion are generally larger than those which come to it, as if they derived some accession in it. "Ganglia igitur," says Soemmerring, "arctiores plexus, tenerorum filorum positu atque molitie, massa quadam vasis divite interposita servatis repræsentant." Ibid. p. 149.

Bichat finds in the interior of the ganglia a soft, spongy, homogeneous tissue, not at all resembling either the substance of the brain, or that of the nerves. He cannot discern in them that expansion of the nervous fibres, which is described by Scarpa. He states that chemical re-agents have a different operation on the nerves and on the ganglia; and that the difference of colour, consistence, and properties tend still further to establish the distinction. If the ganglia are merely expanded nerves, why do the spinal branches, after forming one of these bodies, never transmit sensation and voluntary motion? Why do not the branches coming in and going out correspond in size: why is there not a constant proportion between the nerves and the ganglia? We have already shewn that Gall regards the ganglia as masses of cineritious matter, giving origin to nervous fibres.

Scarpa asserts that the ganglia contain cellular tissue and fat: but Bichat says that they have very little of the former, and none of the latter.

The ganglia are curled up by the action of boiling water; and a continuance of the ebullition afterwards softens them. Alkalies, when strong, act upon them, and have a slight solvent effect: but this is much less considerable and rapid than their action on the brain. They resist putrefaction even longer than the nerves.

*Properties of the Ganglia.*—These are very obscure. Bichat states that he has opened the abdomen of an animal, and exposed the femilunar ganglion, after allowing him to recover from the first alarm of the operation; that he has then irritated the ganglion without the animal becoming at all agitated, while the irritation of a lumbar nerve, as a point of comparison, caused howling and violent struggles.

This author considers it probable that hysteria, hypochondriasis, melancholia, and the long train of nervous disorders, may probably be seated in the ganglia: the feelings and pains attendant on these have a very different character from those which arise from affections of the animal nervous system.

We may state that the mode of action of these organs, and the effects they produce on parts which derive their nerves from them, are entirely unknown. We agree with Soemmerring, who, after enumerating the opinions on this subject, concludes; "Ergo genuinus gangliorum usus adhuc in obscuris latet." (Neurologia, § 161.) A very copious enumeration of opinions concerning the structure and functions of the ganglia may be seen in the first section of Gall's large work.

*Development of the Ganglia.*—They are not more advanced than the other organs in the fœtus; and in this respect are remarkably distinguished from the brain. In the young subject, those affections which are supposed to reside in the ganglia hardly exist. They are as firm in their texture in the fœtus or young person as in the adult. Our want of knowledge of the functions of these organs prevents us from stating any thing further concerning their changes at different periods of life.

*Nerves of the Organic Life.*—Each ganglion is a centre, from which nervous branches go off in different directions. The connection of the ganglia and the nerves is different from what we observe in the brain and spinal marrow. The adhesion



adhesion is very firm, so that if force be applied, the nerve will give way in any situation rather than at the point of connection. Sometimes the nerves coming from the ganglia remain distinct; sometimes two or more unite into one trunk.

After leaving the ganglia, the nerves are disposed in various ways. 1. Some communicate with those of the animal life: and such exist in every ganglion. 2. Each ganglion communicates with the two neighbouring ones, with that above, and that below it; the ophthalmic, maxillary, and sphenopalatine are however excepted from this rule; and there may be exceptions in other situations. 3. Several go to voluntary muscles. All the nerves hitherto enumerated agree entirely with the cerebral nerves in structure. 4. Most of the nerves, arising from the ganglia by separate filaments, are interwoven so as to form plexuses with those of the contiguous ganglia, in the neighbourhood or upon the large vessels. The most remarkable of these are in the abdomen. The nerves of the animal life are generally found in small proportion in them. These plexuses compose a tolerably close network, altogether unlike any thing in the nerves of the animal life, imbedded in cellular tissue, and accommodated to the form of the surrounding organs: the number of small nervous filaments entering into their composition is very considerable. These nerves have a reddish or greyish colour, softer texture, and often a knotted appearance. The plexuses divide into subdivisions, which go to the various organs, particularly of the internal life. These subdivisions consist of numerous small filaments, which communicate most frequently, so as to form networks, but never unite into large cords, and surround the arteries of the organ to which they are distributed. Some of them merely accompany the vessel, without lying close to it: others adhere firmly to the arterial coats, communicate very repeatedly with each other, and seem to form almost an additional covering to the vessel.

When the artery is short, these two orders of branches continue distinct from each other, until they have arrived at the organ: but if the vessel be longer, the exterior filaments gradually join, and are lost in the internal plexus. This plexus may be followed in the large trunks: it divides at the origin of branches, but the filaments become so minute that it is not possible to trace them far. They may be followed further on the spermatic than on any other artery. When we set aside those branches of the ganglia, which communicate with each other, and with the nerves of the animal life, the remainder are distributed almost entirely on the arteries. This circumstance, together with the close and almost inseparable adhesion of the nerves to the arterial trunks, indicates some influence of those parts on the secretions, exhalations, nutrition, &c. of which these vessels convey the materials: the nature of this influence is entirely unknown to us.

Neither the veins, nor the absorbing vessels, are accompanied by such an apparatus of nerves.

The nerves of the ganglia may be divided into two kinds, with respect to their organisation: 1, those which in appearance and texture resemble the cerebral nerves; and 2, the soft reddish or greyish filaments so abundant in the plexuses. The nature of these has not been particularly examined: we do not know whether they have neurilemma and medullary substance.

*Properties of the Organic Nerves.*—They possess much less animal sensibility than the other kind of nerves. Bichat has irritated them in animals, after opening the abdomen, and has also irritated the cellular stratum on the outside of the mucous membrane of the intestine; yet the animal gave very

slight signs of pain. The processes carried on in the organs, to which these nerves are distributed, do not excite sensations. "Every thing," says Gall, "is carried on in these systems without consciousness, by a blind necessity, and under the direction of laws, which they cannot either obey or oppose voluntarily. The viscera have motion: they select the nutriment that is suitable to their nature, and reject what is heterogeneous; secretions and excretions go on in them. But plants exhibit similar phenomena. We know that the same functions take place in acephalous monsters; that the re-action of an organ does not prove that it is the seat of true sensation, which is essentially characterised by perception, or the consciousness of an impression; and that no irritation is felt without the co-operation of the brain: consequently, that we can no more ascribe the property of sensation to the nervous systems of the abdomen and chest, than admit its existence in acephalous monsters and plants. Again, the superior and inferior systems exert their reciprocal influence without consciousness, and without the participation of the will: the affections and passions operate on the viscera, and derangement of the functions of the viscera disturbs the faculties of the mind and of the soul; yet it is equally beyond our power to discover how this mutual influence is exerted, or to arrest its operation." *Anat. et Phys. du Syst. Nerveux*, t. i. p. 37.

Under certain circumstances, however, the nerves of the ganglia appear to transmit impressions to the brain: at least the organs, to which they are sent, are the seat of the most acute pains in various diseases. Independently of the sufferings caused by the more obvious derangements of these organs, they are the seat of various indescribable internal feelings, when not visibly diseased. "I conceive," says Bichat, "that the sensibility of the organic nerves is much exalted in disease. It can hardly be doubted that the cæliac plexus performs an important part in the various sensations which we experience in the epigastrium: the acute pains often accompanying the formation of aneurisms probably arise in part from the distention of the nervous filaments that surround the artery; and the organic nerves are probably much concerned in the sensations experienced in certain nervous diseases." *Anat. Generale*, t. i. p. 241.

The motions of the organs, to which the nerves of the ganglia are distributed, are never subject to the will: they may probably be disturbed by the influence of the brain in cases where the organs of the internal life have their functions affected by the condition of that organ.

It is natural to inquire how far the organic nerves are concerned in the phenomena of the internal life. Are the internal sensations referred to these parts, or the pains produced by their diseases, suspended when the nerves are tied or divided? How are the motions of the organs affected by such operations on the nerves? The deep situation of the ganglia, the great number and small size of the nerves, have hitherto opposed insuperable obstacles to the experimental investigation of these points.

We must not forget that the preceding observations are not applicable to all the ganglia: that the spinal nerves and some nerves of the head have these bodies, and yet convey sensations and voluntary motion in their ordinary state.

*Description of the Cerebral Nerves.*—The *olfactory nerve*; or nerve of the first pair.

The origin of this nerve has been generally assigned to the corpus striatum, which Chaussier has accordingly named *couche du nerf ethmoidal*. Scemmering observed that there was no proportion in animals between the nerve and this eminence: and Cuvier shewed that the cetacea (as the dolphin



dolphin and porpoise), in whom there are no olfactory nerves, nor organs of smelling, have nevertheless corpora striata. It is the only nerve which can be asserted, with any probability, to arise from the hemispheres of the brain: and even if this be allowed, it has no connection with the white substance. It proceeds from the grey substance on the under surface of the organ, and its first filaments are perceived towards the front of the inner convolutions of the middle lobes. They are soft, and appear for some time enveloped in the grey matter: they come together and form three principal roots, an outer longer, and two internal shorter ones. The external may be followed to the bottom of the fissura Sylvii.

Gall and Spurzheim are inclined to refer the origin of this nerve to a fasciculus, arising at the side of the corpora pyramidalia, passing through the pons Varolii to the testis, continued thence to the corpus geniculatum internum, and then passing under the optic nerve, beyond which they cannot trace it. *Recherches*, p. 99.

The three origins, of which the middle is cortical and the two exterior medullary, unite into a very soft nervous chord of a triangular prismatic figure, which runs in a longitudinal groove of the under surface of the anterior lobe, confined by the tunica arachnoidea. It advances from behind forwards, inclining more and more towards the nerve of the opposite side, and increasing gradually in size, until it arrives on the upper surface of the cribriform plate of the ethmoid bone: here it quits the groove of the anterior lobe, and swells into an oval ball of a greyish colour and very soft consistence, in which the medullary fibres appear separated by cortical matter, as in a ganglion. For a description of the remaining course of this nerve, see NOSE.

When a section of the olfactory nerve is made at right angles to its course, cineritious substance is observed in its middle, and sometimes towards the side: and it may be also partially seen on the external surface. The latter has a peculiar laminated and striated appearance, compared by Soemmerring to the pistil of the lily: this is best seen by immersing the recent nerve in spirits of wine.

Besides its origin, the olfactory nerve has the following peculiarities: 1, folded and striated external appearance; 2, softness, in which we can hardly distinguish any thing fibrous; 3, triangular prismatic figure; 4, position in a groove of the brain; 5, approximation of the right and left nerves before they penetrate the dura mater: in all other cases the corresponding nerves diverge; 6, the cineritious bulb; 7, the cineritious substance within the nerve; 8, passage through the skull by numerous foramina.

It is the largest nerve of the brain in an embryo of three months, and hollow: in the fœtus at full time it has a cineritious appearance and rounded figure; it is shorter, softer and fibrous, and large in comparison with the other nerves.

The nerve of one side is sometimes larger than the other: but an appearance of this kind may arise from its lying deeper in the groove of the anterior lobe.

*Optic Nerve*; or nerve of the second pair.—The large hemispherical eminences of the lateral ventricles have been generally regarded as the origin of these nerves; and hence the names thalami nervorum opticorum, couches des nerfs optiques, &c. applied to these parts. The optic nerve, says Soemmerring, arises by very minute roots or fibres from the posterior and inferior part of the thalamus, from the corpora geniculata, and the corpora bigemina: and these origins are visible when the parts are merely exposed by opening the ventricle, without any further dissection.

Gall observed that there is no proportion between the size of the thalamus and of the nerve arising from it: that the

former is much smaller in the horse, the cow, the deer, than in man, while the latter is much larger: hence he doubted the justice of the common opinion, and further anatomical investigation justified his suspicion. "A broad band," says he, "composed of nervous filaments, is seen in man and animals, but more distinctly in the latter, as in the horse, cow, sheep, pig, dog, &c. to proceed from the upper or anterior pair of the corpora quadrigemina (nates). It turns round the outer edge of the optic thalami, then joins a considerable collection of grey substance, called the corpus geniculatum externum, in which it is increased. Hitherto the whole band adheres to the optic thalami, but afterwards it simply lies on the crus cerebri, where it is no longer attached, except by its external anterior edge, which is connected to the neighbouring substance of the brain." *Anat. et Physiol. du Syst. Nerveux*, p. 112.

In support of this opinion concerning the origin of the optic nerve, Gall observes, that in animals it bears a proportion in its size to that of the natis, although there is no such proportion observed between it and the thalamus. He also found the nerve unaffected, where an ulcer had destroyed half the thalamus: while, on the contrary, when the nerve has been diminished in size, the natis has experienced an analogous change.

When it is disengaged from the thalamus, the optic nerve makes an extensive sweep (tractus opticus) over the surface of the crus cerebri, advancing towards the nerve of the opposite side. In this course it has a flattened figure, is unconnected with the crus on its inner edge, but receives filaments on the outer, and is enveloped in the vascular ramifications about this part. Towards the front it grows rounder, becomes adherent to the cineritious pyramidal prominence (tuber cinereum) that closes the front of the third ventricle, and joins the nerve of the opposite side, the substance of the two appearing completely mixed. Several filaments are received from the tuber, so that the nerves are larger after than before their union. The united portion lies on the smooth space in front of the sella Turcica between the two anterior clinoid processes. From this point the nerves, visibly enlarged, again separate to proceed respectively through the right and left foramina optica. Their course in the orbits is described under the article EYE.

The degree of union between the two nerves at their apparent conjunction has been a matter considerably disputed. (See DECUSSATION.) Apparently the right and left have their substance completely confounded in the middle portion. The following is the account given by Soemmerring, who has bestowed much attention on the subject. "The right and left nerves decussate, which can sometimes, but not always, be observed, when one is diseased or considerably smaller than the other: for the nerve of the opposite side is found diseased, discoloured, or smaller before the junction. Sometimes, but not always, the thalamus of the opposite side, and sometimes the thalamus of the same side, is changed in structure, or smaller. For examples of the latter, see Meckel's note to Soemmerring's Version of Haller's *Primæ Linæ*, § 509, and Michaelis, *über die Durchkreuzung der Sehnerven*, Halle 1790. The optic nerve may be altered as far as the union, and no change perceptible behind that point. Therefore we cannot determine whether all the fibres, or some only decussate."—"The mode of decussation," he adds in a note, "can be best observed in animals, as the horse, dog, pig, cat, racoon, squirrel, birds, amphibia, &c. In the skate, one nerve penetrates the other: in fishes one lies on the other; and they are connected merely by loose cellular substance. In disease the nerve is sometimes altered from the affected eye to the junction, and no further.



further. Nöthig has adduced in his "Dissertatio de Decussatione Nervorum Opticorum," various cases and authorities which cannot be detailed here. The specimens mentioned in that dissertation are in my possession. Several anatomists, as Ackermann, Billmann, Leveling, Michaelis, Rougemont, Walter, Wenzel, and Cloßius and Ebel in the horse, have adopted my opinion." (De Corp. Hum. Fab. t. iv. § 213.) Cuvier and Gall adopt the same view: "Cuvier has the brain of a horse, in which one optic nerve is diminished in size (atrophie), and the same change is continued behind the union on the opposite side. All our observations on the human subject, the horse, hare, and fox, confirm this fact, and make us doubt the authenticity of the cases alleged on the opposite side, which we cannot admit without attributing inconsistency to nature." Anat. et Physiol. du Cerveau, &c. p. 114.

The optic is firmer than the olfactory or auditory nerve, but softer than the rest: it is the largest cerebral nerve after the fifth.

It is peculiar to the optic nerve, 1, to arise from a distinct eminence of the brain; 2, the junction or decussation with the opposite nerve; 3, the surrounding sheath of dura mater in the orbit; 4, the contraction in its passage through the coats of the eye, before it expands into the retina; 5, its expansion into a membrane, inadherent on all sides, and the foramen in that membrane. From their origin to the point of their union the optic nerves are soft and pulpy: they contain no cineritious matter internally, nor are they striated on the surface, like the olfactory. They are covered by the middle lobes throughout all the first part of their course. They become firmer about their junction, but have no neurilema within the cranium, being made up entirely of medullary substance. The orbital portion, besides its covering of dura mater, has a dense neurilema, forming a general external investment, so that the nerve represents a single thread, and is not divisible, like other nerves, into secondary filaments: this neurilema sends productions from its inner surface, forming several canals, in which the medullary substance is contained.

*Nervus Oculo-motorius*; or nerve of the third pair.—It arises from the crus cerebri, or its inner or anterior edge, where the divergence of these two processes leaves a vacancy, named by Vicq d'Azyr la fosse des nerfs oculo-musculaires, just in front of the pons Varolii. Its filaments may be followed in firmer brains to the under surface of the pons: they come through the black substance of the crus cerebri, and are increased, according to Gall, in their passage. The threads, coming out of the crus cerebri, are collected together into a roundish nerve by the pia mater: it separates from the opposite nerve, passes between the profunda cerebri and superior cerebelli arteries, and is sometimes perforated by the trunk or by a large branch of the former. It separates very easily from the crus cerebri, when the surrounding pia mater or vessels are torn off from the brain: so that cautious dissection is necessary, when we wish to demonstrate its origin. This soft part, however, is very small, as the nerve immediately becomes covered with neurilema, and acquires considerable firmness. It goes obliquely forwards and outwards, unconnected to the surrounding parts, and therefore easily brought into view near the edge of the tentorium by elevating the brain. Just at the point formed by the anterior termination of the tentorium cerebelli, it enters a canal of the dura mater, which surrounds it as far as the foramen lacerum orbitale. This canal is formed on the outside by that portion of dura mater which constitutes the cavernous sinus: on the inside, a thin stratum of cellular tissue separates it from the carotid

artery. Arriving in a direction slightly oblique at the level of the foramen lacerum, it divides into two branches before penetrating that opening. In most of its course under the dura mater it is situated more internally and higher than the trochlearis and ophthalmic nerves: but when it has arrived under the anterior clinoid process, and has divided, its superior branch is covered by those two nerves, which cross it obliquely, and become situated on its inner side. Of the two branches, one is superior, the other inferior: both enter the orbit by the broadest part of the foramen lacerum, and penetrate, together with the nervus motor externus and the ophthalmic nerve, between the two origins of the external straight muscle.

I. The superior and smaller branch mounts over the optic, the nasal, and the ophthalmic nerves to the under surface of the rectus superior muscle, in which it is distributed, with the exception of a small branch sent to the levator palpebræ superioris.

II. The inferior branch, much larger than the preceding, passes under the optic nerve, and divides into, 1, an internal branch, which supplies the rectus internus muscle; 2, a middle shorter one for the rectus inferior; and 3, an external, the longest and slenderest of the three, which sends a small branch to the outer side of the optic nerve, where it joins the ophthalmic ganglion, and then terminates on the obliquus oculi inferior.

We notice nothing peculiar in its structure; it has a firm neurilema, both in the cranium and orbit. The peculiarities of the nerve are, that the origins of the right and left are very near together; that it supplies five muscles of the globe; and, through the ophthalmic ganglion, gives branches to the iris.

*Nervus Trochlearis*; nerve of the fourth pair: n. patheticus.—This nerve is the smallest of those which arise from the brain, and has the longest course within the cranium. It arises, under the tubercula quadrigemina, from the valve of the brain, by a single, double, or triple root; and is sometimes joined, by a transverse communication, to the opposite nerve. The origin, soft and unprovided with neurilema, may be torn very easily; but the nerve soon acquires greater firmness. It runs round the crus cerebri, between the cerebrum and cerebellum, covered by the arachnoid coat, which must be cut in order to expose it: it then continues its course along the edge of the tentorium cerebelli to the posterior clinoid process. There it enters a canal of the dura mater, separated from the cavernous sinus by a peculiar dense tissue. It goes horizontally forwards between the oculo-motorius, and the ophthalmic, and crosses the former obliquely, as it approaches the orbit, which it enters at the broad part of the foramen lacerum, through a fibrous hole in the lining of dura mater. In this cavity it passes over the two elevator muscles, and immediately under the membranous lining of the orbit, to the superior oblique muscle, in which it ends.

It is the slenderest nerve of the brain, almost equalling in size a large sewing thread: it has the highest origin; and pursues the longest course within the dura mater: lastly, it supplies only a single muscle.

*Nervus Trigemini*; nerve of the fifth pair: pair mixte of Gall.—This is the largest nerve of the brain, particularly in individuals who have a large face: at all events, it is equal in size to the optic. Its origin has generally been referred to the side of the pons Varolii, from which it is detached just at the front of the crus cerebelli. Gall traces its roots backwards from this part, through the pons to the outer edge of the corpus olivare: it is divided, within the pons, into three principal fasciculi, and its fibres arise from the



the grey substance in various places. When it is disengaged from the crus cerebelli, it forms a thick flattened cord made up of numerous (from 70 to 100) distinct parallel threads, loosely united. Each of these is dense and firm, on account of the neurilemma covering it: but they are feebly connected to the medullary substance, and just at the point of connection the nerve is firmer than in its subsequent course. It consists of two portions connected by loose cellular tissue, and sometimes separated by the passage of blood-vessels; viz. a larger posterior and exterior, a smaller anterior composed of fewer, softer, and whiter, but larger threads. It goes forwards and outwards, surrounded by the arachnoid coat, passes under the front of the tentorium cerebelli, and enters a peculiar canal of the dura mater by an oval aperture towards the anterior and upper part of the petrous portion of the temporal bone. This canal is situated on the outside of the cavernous sinus: as the nerve enters it, it becomes broader and flatter; the filaments of the larger portion are separated from each other, divided, and formed into a plexus, so that the whole trunk undergoes a kind of conical enlargement, and presents a flattened band instead of a round cord. After a short course, it swells into a knot or ganglion (ganglion Glaseri), concave above, where the filaments enter, and convex below, where they depart, having a reddish colour from the distribution of numerous vessels in it, and presenting a kind of middle appearance between that of a ganglion and a plexus. The dura mater has a very close adhesion to this knot; in which the nerve is more than six times its original thickness. The ganglion is softer than those of the spinal nerves; but firmer than the bulb of the olfactory: although the connection of the dura mater is so close, that it hardly admits of separation without injury, it has been ascertained that no filaments enter that membrane to be distributed on it. After the ganglion, the nerve resumes its original appearance, and divides into three branches, surrounded by the dura mater, and passing out of the cranium by distinct foramina: the nervous fibres are however so completely interwoven in the ganglion, that the continuity between the threads of the trunk and of its three branches is completely interrupted.

When the nerve and its ganglion are raised from the surface of the cranium, and turned over, we perceive that the whiter filaments, which form the anterior or smaller division of the nerve, go along the under surface of the swelling without being at all concerned in its formation. Their size, whiteness, and want of connection with the ganglion, immediately strike us: they join the inferior maxillary nerve, and constitute the crotaphitic and buccinator branches of that nerve: Palletta, therefore, divides the trigeminus into five branches, adding the two last mentioned to the three ordinarily described.

The three branches of the trigeminus separate from the ganglion as follows: the ophthalmic is the smallest, and the first towards the front: it separates from the others from its origin, and goes obliquely forwards and upwards towards the outer side of the cavernous sinus. The second, which is larger, arises below this, and is called the superior maxillary: it goes horizontally forwards, and after a passage of some length enters the foramen rotundum. The third and hindmost is the largest, and descends almost perpendicularly into the foramen ovale.

1. The ophthalmic nerve, covered by the dura mater, is separated from the cavernous sinus by cellular tissue, and retains the fibrous character of the trunk. Placed at first below the oculo-motorius and the trochlearis, it rises with the

latter above the former, and divides, before it enters, or as it enters the orbit by the foramen lacerum, into three branches: an external small one, the lacrymal nerve; a superior, which is the largest, the frontal nerve; and a middle one in situation and size, the nasal nerve.

1. The lacrymal nerve runs along the outer side of the orbit between the periorbitum and the abductor muscle: it is divided into several filaments accompanying the lacrymal artery, and entering the gland. It is difficult to determine whether these end in the substance of the gland: but several manifestly terminate on the integuments of the eyelid and forehead. It has a communication with the subcutaneous malæ.

2. The frontal nerve, which by its size would be regarded as the continuation of the trunk, enters the orbit between its superior surface and the corresponding extremity of the rectus superior: it goes obliquely forwards and inwards, over all the contents of the cavity, and immediately under the bony arch, and divides sooner or later into two branches, which vary in their relative size. 1. The internal, or supratrochlearis, is commonly the smallest, and quits the orbit between the superciliary notch and the cartilaginous pulley, to distribute its branches on the superior eyelid, the internal part of the forehead, the corrugator supercilii, orbicularis palpebrarum, epicranium, and integuments. A slender filament of this nerve joins the infratrochlearis, and gives a twig to the frontal sinus. Its branches on the forehead lie rather deeper than those of the following branch. 2. The external or proper frontal branch quits the cavity by the superciliary notch either in one or two branches, and sends slender superficial, and larger deep-seated ramifications to the epicranium, orbicularis, and integuments of the upper eyelid, eyebrow, forehead, temple, and top of the head. It may be dissected most conveniently by detaching all the soft parts from behind forwards, towards the superciliary arch, and thus making it out from below; we find its ramifications of two orders, deep-seated muscular, and superficial cutaneous. Some unite with ascending branches of the facial nerve, others form a minute network round the frontal arteries. They may be traced almost to the occiput. As the trunk and ramifications of the frontal nerve lie so near the skin, and are placed against the bone on the other side, they must be exposed to external pressure: the painful sensations caused by wearing a tight hat is ascribed by Bichat to this cause.

3. The nasal branch, naso-ocularis, the lowest and most interior of the three, divides from its very origin into two. (a) A small twig, the lowest in situation produced from the ophthalmic, joining the ophthalmic or lenticular ganglion, but previously communicating with the smaller branch of the oculo-motorius. The ganglion formed by the conjunction of this with the branch already described of the oculo-motorius, is very small, of a nearly square figure, placed on the outer side of the optic nerve among the fat. The root of the ganglion from the nerve of the third pair is short and thick, that from the ophthalmic long and slender, and sometimes detached from the trunk before it enters the orbit: sometimes the latter does not exist. Two fasciculi of ciliary nerves are produced from the ganglion, and separated from each other more widely as they come nearer to the globe. The superior and smaller fasciculus, lying close on the optic nerve, consists first of three, and then of six twigs of different size: the inferior larger bundle is made up of eight or ten small filaments, less closely adhering to the nerve; one leaves the rest, and enters the sclerotica about its middle, under the rectus externus.



## NERVOUS SYSTEM.

The ciliary nerves, thus produced, differ in size, do not communicate together, but proceed in a tortuous direction to the back of the sclerótica, where, increased in magnitude and connected with the ciliary arteries, they obliquely perforate the membrane, running for some length within it. They then follow a straight and nearly parallel course, between the sclerótica and choroid, giving no branches to either of these, to the iris. They are very rarely united to each other by transverse threads. At the orbiculus ciliaris they divide into smaller branches, which are again subdivided, and the minutest threads, having a serpentine direction, are interposed between the ciliary vessels like white radiated fibres. When the vessels are well injected, and the part examined in water, a series of white points is observed in the orbiculus ciliaris, receiving the ciliary nerves on one side, and sending twigs towards the pupil on the other, thus resembling ganglia.

6. The nasal branch lies close on the sheath of the optic nerve, which it crosses, under the rectus superior and levator palpebræ; it produces one or two ciliary branches, which resemble in their distribution those just described, and then is divided into two branches. One of these passes through the foramen orbitarium internum anticus to the cavity of the cranium, where it is covered by the dura mater: it goes out of the skull through the front of the cribriform lamella, and is distributed towards the anterior part of the septum nasi, and of the outer side of the cavity. The other, sometimes called infratrochlearis, goes to the inner corner of the eye, below the trochlea, and distributes several very small twigs to the integuments of the forehead, and the neighbouring muscles, communicating with the facial and infraorbital nerves.

II. The superior maxillary nerve holds a middle place in respect to size between the other two branches of the trigeminus. It goes forwards and rather outwards from the middle of the ganglion, preserving at first its greyish hue and fibrous appearance: after a short course it enters the foramen rotundum, losing those characters and becoming more round in its figure. After penetrating that foramen, it runs horizontally through much cellular tissue, in the space between the maxillary and sphenoid bones, sometimes called the pterygo-maxillary fossa. It then enters the infraorbital canal, and passes through that to its termination on the face.

1. In passing through the foramen rotundum, the superior maxillary nerve sends off a small branch, the subcutaneous malæ, which enters the orbit by the sphenomaxillary fissure, passes along the outer side of the cavity, externally to the periorbitum, and then penetrates the canal of the malar bone to appear on the cheek, where it is distributed superficially, communicating sometimes with the facial and infraorbital nerves. It produces a twig running towards the lacrymal glands, and communicating with the nerves of that gland: and another, which enters the temporal fossa by a foramen of the malar bone, and communicates with the deep-seated temporal nerves.

In the pterygo-maxillary fossa the nerve produces one or two branches, which go downwards and inwards, surrounded by much fat: if there is only one, it is larger; when there are two, they are united again in a kind of ganglion, named the sphenopalatine, and first described by Meckel. This does not resemble the ganglia on the nerves of the viscera, and sometimes it is not perceptible at all. When there is one branch, it swells a little, and produces from the enlargement the numerous branches of the neighbouring parts: if there are two, they unite together, and this union gives the ap-

pearance of a ganglion, placed just on the internal side of the sphenopalatine foramen. From this point, whether it exhibits a ganglion-like swelling or not, the numerous following branches proceed.

a. Sphenopalatine or nasal branches, (*nervi nasales priores*) passing through the foramen of the same name, in variable numbers, into the nose. Some of these are distributed on the two superior turbinated bones, particularly on their concave surface; but the largest, discovered by Cotunni, and since called naso-palatine, goes in front of the sphenoidal sinuses along the upper surface of the nasal cavity to the back of the septum, along which it runs obliquely forwards and downwards to the foramen incisivum. It passes to the palate through a small peculiar canal immediately behind the foramen incisivum, and is distributed on the neighbouring part of the palatine membrane.

b. Three palatine nerves, one large and two smaller. The former enters the pterygo-palatine canal, formed between the maxillary, palatine, and sphenoid bones, and passes through it. The different filaments are often separate at this part, and connected only by a loose tissue. The great palatine nerve sends off two branches (*nervi nasales inferiores*); a smaller to the middle, and a larger to the inferior turbinated bone: the ramifications of the latter pass from behind forwards in grooves of the convex surface. It produces also a branch, which descends in a peculiar canal of the palate bone to the soft palate. The trunk of the nerve quits the pterygo-palatine canal by the foramen palatinum posterius, bends forwards in an irregular groove of the palatine arch, and divides into several branches, which supply the whole of the palatine membrane and gums of the upper teeth. The middle palatine nerve (*n. palati minor posterior*), placed behind the former, runs along a separate canal nearly parallel to the pterygo-palatine, and comes out of it behind the curved process of the pterygoid plate to be distributed on the amygdala and in the substance of the palate. The small palatine nerve (*n. palatinus minimus exterior*), which is not constant, goes through a short canal, which terminates between the maxillary tubercle and the pyramidal process of the os palati; it is lost on the tonsil, uvula, and palate.

c. The pterygoid or Vidian nerve goes off horizontally backwards from the sphenopalatine ganglion, and immediately enters the bony canal at the basis of the pterygoid process, having first given two extremely small branches to the sphenoidal sinuses. In the canal it produces two or three nasal branches (*nasales superiores posteriores*) distributed on the upper and back part of the septum, the neighbouring arch of the pharynx and orifice of the Eustachian tube. The trunk then quits the pterygoid canal by its posterior aperture, passes through the cartilaginous substance that occupies the irregular deficiency at the side of the body of the sphenoid, and close to the second turn of the carotid artery divides into two branches, a superficial, petrosal or cranial, and a deep-seated or carotid. The former enters the cranium between the petrous portion and the neighbouring edge of the sphenoid bone; passes over the surface of the former in a peculiar groove of the bone, covered by dura mater, and enters the aquæductus Fallopii by a broken aperture on the surface of the bone, to join the trunk of the facial nerve. The latter runs close upon the internal carotid artery, accompanies that vessel in its passage through the cranium, and joins in the carotid canal a branch of the abductor nerve; the trunk formed by this union joins the upper extremity of the superior cervical ganglion. Sometimes the two branches enter the ganglion separately, and several other varieties are observed



observed in the distribution and connections of this branch, and that of the abductor nerve.

Having produced the nerves above described, from the sphenopalatine ganglion, in the pterygo-maxillary fossa, the superior maxillary nerve advances horizontally to the sphenomaxillary fissure, and enters the infraorbital canal, at the same time taking that name. Just before it passes in, it gives off one or two branches to the teeth; *d*, nervus alveolaris, or dentalis posterior, which descends on the maxillary tubercle, and enters a bony canal above the molar teeth. It communicates with the anterior dental nerve, supplies the three grinders, the membrane of the maxillary sinus, and part of the buccinator.

*e*. The anterior dental branch (alveolaris or dentalis anterior) enters a canal of the superior maxillary bone, communicates with the posterior branch, and sends filaments to the incisor, canine, and bicuspid teeth.

The infraorbital nerve divides in its canal into several branches, which continue parallel; when they emerge at the infraorbital foramen, they immediately separate, like radii from a centre, and are spread over all that part of the face, which is bounded by the eye above, by the mouth below, the nose on the inside, and the masseter on the outside. The multiplicity of these ramifications, many of which are very large, would render it very tedious to enter into a detailed account of them. They may be divided into *a*, the superior or palpebral branches, distributed to the lower eyelid, the integuments of the cheek, and muscles at the root of the nose, and communicating with the facial nerve, the infratrochlearis, and sometimes with the lacrymal; *b*, inferior or labial branches, which are large, expanded on the muscles and skin of the upper lip, and communicate very freely with the facial; *c*, internal or nasal branches, to the alæ, septum, and muscles of the external nose; and *d*, external branches to the zygomaticus major, levator anguli, and commissure of the lips, joining branches of the facial.

III. Inferior maxillary nerve; nervus gustatorius. This is composed of two distinct portions, an external and larger, which is the most considerable of the three branches produced from the ganglion Glaseri, and has a very short course before it arrives at the foramen ovale; an internal and smaller, already described as not having any share in composing the ganglion. Both these go together through the foramen ovale, where the fibrous plexiform arrangement of the former distinguishes it very clearly from the latter. As the nerve quits the foramen ovale, the smaller portion gets in front; the two are sometimes intimately united, at others distinct, in which case the smaller part produces the buccinator and one of the temporal nerves. Below the foramen ovale, the trunk of the nerve is placed between the zygomatic fossa, and the external pterygoid muscle; there it divides into two portions, a superior and external, an inferior and internal. From the former proceed the temporal, masseteric, buccinator and pterygoid nerves; from the latter, which is the largest, the inferior maxillary, lingual, and auricular.

*a b*. The external and internal deep temporal nerves pass at first horizontally between the external pterygoid muscle and the bone, then turn upwards and outwards into the substance of the temporal muscles in which they are distributed, communicating with the neighbouring superficial ramifications.

*c*. The masseteric nerve is a considerable branch passing between the pterygoideus externus and the bone, close on the articulation of the lower jaw; it then goes between the condyle and the coronoid process, and enters the internal surface of the masseter, in which it terminates.

*d*. The buccinator nerve, or nerve of the cheek, proceeds forwards and downwards between the two pterygoidei, to

the external of which, and to the temporal muscle, it gives branches; it then comes on the buccinator, and splits into several filaments, which reach as far as the corner of the mouth, and communicate with the facial nerves.

*e*. The pterygoid nerve is the smallest branch of the superior division; it supplies the pterygoideus inter us and circumflexus palati.

*f*. The lingual or gustatory nerve, is commonly rather smaller than the dental. It receives the chorda tympani a little below the fissura Glaseri, and a very acute angle pointing downwards is formed by their union. The nerve then descends between the pterygoideus internus and the jaw, goes between the submaxillary gland and the membrane of the mouth, accompanies the excretory duct of this gland, between the upper surface of the mylo-hyoideus and hyoglossus, and passes very close upon and above the sublingual gland, to the side of the tongue, where it lies between the hyoglossus and the lingualis. It runs along the side to the very point of the tongue. It gives a branch to the pterygoideus internus, and two or three very slender ones to the back part of the gums; several branches, which either form a small ganglion (ganglion maxillare), or are united into a plexus, to the submaxillary gland and neighbouring parts; branches of communication with the hypoglossal nerve; four or five twigs to the sublingual gland and neighbouring part of the gums. At the level of the latter gland, considerable branches begin to be detached from the trunk for the tissue of the tongue, and continue to arise, to the number of ten or twelve, until the whole nerve is consumed. These penetrate between the genioglossus and lingualis, and are distributed in the proper tissue of the organ; they may be traced, through the muscular fibres, to the membrane covering the back, sides, and apex of the part, and even into the papillæ of the membrane in which the sense of taste resides. Thus this nerve constitutes the organ of the sense of tasting, while the hypoglossal belongs to the motions of the part: that these two functions belong to distinct nerves, is rendered probable by the pathological cases, in which the sense or the motion of the organ is separately destroyed.

*g*. The inferior maxillary or dental nerve (mandibulopalpalis, or maxillaris inferior) is a very large nerve, descends by the side of the former, first between the two pterygoid muscles, and then between the internal and the lower jaw, corresponding on the inside to the internal lateral ligament of this bone. Near the orifice of the inferior maxillary canal, it produces the nervus mylo-hyoideus, which runs along a groove or even an entire canal of the lower jaw from behind forwards, is distributed principally on the mylo-hyoideus muscle, but gives also some branches to the submaxillary gland, genio-hyoideus, and digastricus. The trunk of the inferior maxillary nerve then enters the canal of the lower jaw, in company with an artery and a vein, and runs completely through it, giving branches to the molares and bicuspides. At the foramen mentale it divides into two portions; a smaller, which passes forwards in a canal under the canine and incisor teeth, and supplies those teeth; and a much larger, which comes out of the foramen mentale, and divides immediately into numerous filaments, communicating freely with those of the facial.

The twigs sent to the teeth are very small; they can be followed with considerable difficulty to the pores at the extremities of the fangs, and are lost on the pulpy substance filling the cavities; whether they send any branches to the bone of the tooth, and whether that part possesses any sensibility, are questions considered in the description of the teeth, under the article CRANIUM. The size of the trunk is very little diminished in its passage through the jaw:



## NERVOUS SYSTEM.

"egressus foramine, vix exilior," Soemmerring: yet in the *Anatomie Descriptive* of Bichat, t. iii, p. 188, it is said to be diminished by one half.

The branch that comes out at the foramen mentale, sometimes called *nervus mentalis*, may be most advantageously observed by dividing the membrane of the mouth, and dissecting from within. It either comes out in two branches, or divides very soon after its exit into an exterior smaller, and an interior larger branch. These are again very soon subdivided in a radiated manner; the branches first ascend between the membrane and the muscles, supplying the depressor anguli oris and labii inferioris proprius, the levator menti, orbicularis and buccinator, and then enter into the substance of these muscles. They ascend to the very edge of the lips, and terminate in the orbicularis, the mucous glands and the skin. In a careful dissection, the whole margin of the mouth is found to receive numerous filaments, which are distributed abundantly on the integuments, where they exhibit the beautiful papillary structure; these nerves come from the mental in the lower lip, and from the superior maxillary in the upper.

b. The superficial temporal or auricular nerve turns horizontally along the back part of the neck of the condyle, between it and the meatus auditorius externus, produces in this situation branches that communicate with the facial, then ascends in front of the meatus, covered by the parotid gland, giving branches to both those parts, and to the concha, and arrives at the basis of the zygomatic process. It passes through the parotid towards the temple, and is distributed superficially, communicating with the facial and subcutaneous maxillæ.

It appears from this description, that the *nervus trigeminus* supplies all the muscles of the face, the forehead and its muscles, the eye-lids and their muscles; the external and internal parts of the nose; the iris; the external ear, skin of the cheeks, lips and their muscles; the mucous surface and the muscles of the tongue; the salivary glands and the teeth. Its various branches are not only united by communications to each other, but are also joined to the third, fourth, and sixth cerebral nerves; to the facial both in the skull and face, to the great sympathetic, and the second and third cervical.

The *abductor nerve*, motor externus, abducens, nerve of the sixth pair, is of a middle size, between the third and fourth, and extends from the upper part of the medulla spinalis to the rectus externus oculi. It comes out of the groove that separates the pons from the medulla spinalis, and its origin is referred, sometimes to the pons, sometimes to the corpora pyramidalia. "If we examine it," says Gall, "in the calf, deer, and particularly in the horse, its origin cannot be mistaken. It appears as a small fasciculus, lying by the corpus pyramidale, and generally dividing behind the pons into two smaller, which are separately disengaged from the surface. The pons being much larger in man than in animals, some small transverse fibres cover the origin of this nerve, and cause an appearance, as if the nerve arose from this part, although its origin may in fact be traced to the same point as in the animals already named." (*Anat. et Phys. du Syst. Nerveux*, p. 103.) This nerve has a fibrous texture at its origin, and consists usually of a larger exterior, and a smaller internal portion, which sometimes penetrate the dura mater separately, and are not joined until they arrive in the cavernous sinus.

It goes from behind forwards, upwards, and outwards, between the pons and the basilar excavation of the cranium, presenting a flattened form, and adhering closely to the former. It penetrates the dura mater below the posterior

clinoid process, and enters the cavernous sinus, in which it lies on the outside of, and is closely connected to the carotid artery; it goes through the sinus, in contact, as well as the artery just mentioned, with the blood in its cavity. and hence presents a red colour after death. Opposite the internal orifice of the carotid canal, one, two, or more slender and reddish filaments are connected to it, at an angle rather acute forwards, and obtuse backwards. These filaments pass with the internal carotid through the cranium, communicate with the Vidian nerve, and join the superior cervical ganglion. The abductor nerve is larger in size in front of this connection than behind it. It enters the orbit at the foramen lacerum, in company with the oculo-motorius, and the nasal branch of the ophthalmic, between the two origins of the rectus externus, and proceeds between this muscle and the optic nerve, dividing into several filaments, which are entirely lost in the muscle. It appears, therefore, that the abductor nerve, and the filaments produced from the cervical ganglion, are consumed in that single muscle of the eye.

All the nerves distributed on parts contained in the orbit, and the ganglion of the fifth nerve, are represented in the plates illustrating the anatomy of the eye. See *Plate III. figs. 3, 4, 11, and 12.* The description is contained in the article *EYE*.

The *facial nerve*, with the auditory, which follows it, have generally been classed together as composing a single nerve of the seventh pair; the former was called *portio dura*, and the latter *portio mollis* of the seventh cerebral nerve. The two nerves, although lying for some part of their course in contact, are perfectly distinct throughout: in a numerical arrangement the former will be the seventh, and the latter the eighth.

The facial nerve is detached from the brain behind the crus cerebelli, and its origin has been generally referred to the posterior and lateral part of the pons. Gall states, that its origin has no connection with the pons; that in animals its commencement is seen under the appearance of a broad fasciculus between the corpus olivare and the glossopharyngeal nerve; that it ascends towards a transverse band placed at the lower edge of the pons, passes under it, and then comes out by the side of the auditory nerve; if it appears in the human subject to come from the pons, it is because some portion of that organ is placed over it. *Anat. et Phys. &c.* p. 104.

Two or three filaments are placed between the facial and auditory nerves; but they join the former sooner or later.

It is very soft at the situation of its connection with the brain, but it soon becomes covered by neurilemma, and acquires a firmer consistence. It enters the internal auditory meatus, in company with the auditory nerve, and goes with it to the bottom of that passage; it enters and passes through the aquæductus Fallopii, which is lined by a thin fibrous layer, and filled completely by the nerve, which, however, as in the case of all nerves traversing bony passages, is loose and unconfined in the tube. It quits the aquæduct at the foramen stylo-mastoideum, passes outwards and forwards under the parotid gland, and divides into two branches, which will be described presently.

In the aquæduct it produces no branch until it has arrived at the hiatus Fallopii, and there it is joined by the superficial or petrosal branch of the Vidian nerve; it afterwards gives a branch to the internal muscle of the malleus, and another very small twig to the stapedius. It then gives rise to the chorda tympani, a considerable nerve, of which the passage across the tympanum is described in the article *EAR*. This goes out of the cavity at the fissura Glaseri, and joins the lingual



lingual branch of the inferior maxillary nerve at a very acute angle; the latter nerve is obviously larger after the junction.

As soon as the facial nerve has quitted the aquæduct, it sends off, 1, the posterior auricular nerve (*nervus auris posterior*, or *occipitalis*, or *externus profundus*), which mounts in front of the mastoid process, and is distributed on the convexity of the concha, and the neighbouring part of the occipital region; 2, a branch to the styloid muscles (*nervus stylo-hyoideus*) communicating with filaments from the superior cervical ganglion; and 3, another to the back of the digastric, communicating with the glosso-pharyngeal, and the laryngeal branch of the par vagum.

After giving these branches, which can only be dissected well from behind, after having removed the vertebral column, the facial nerve enters the parotid gland, and is at first very deeply buried in it, but descends obliquely and comes nearer to the surface. About the lower third part of the gland, that is, nearer to the angle of the jaw than to the mastoid process, it divides into two branches, which may be called temporo-facial (*ramus major*, superior, or ascending), and cervico-facial, (*ramus minor*, inferior, or descending.) Sometimes there are three branches, or even more, but the various subdivisions correspond always to the arrangement just indicated.

1. Temporo-facial branch. Concealed, like the trunk from which it arises, in the parotid gland, it passes forwards and upwards towards the neck of the maxillary condyle, which it crosses at an acute angle. A twig or two in this situation penetrate behind the condyle, to communicate with the auricular branch of the inferior maxillary nerve. Very soon after the trunk divides into seven or eight diverging branches, which are spread out on the face and temple, and may be distinguished into superficial temporal, malar, and nerves of the cheek.

a. The superficial temporal are generally two in number; give some twigs to the parotid, and then mount over the zygoma; they are distributed very extensively to the integuments of this region, and communicate with the auricular, deep temporal, and lacrymal nerves.

b. There are commonly two malar nerves, which go towards the os malæ, and divide into numerous filaments distributed on the surrounding muscles, and communicating freely with the lacrymal, subcutaneous malæ, and particularly the infraorbital.

c. Three branches generally pass transversely over the masseter to the cheek, communicate with each other, and with the filaments of the cervico-facial branch. The upper one goes towards the root of the nose; the second, which is the largest of this division of the facial nerve, passes over the buccinator nearly to the corner of the mouth, communicating very freely with the infraorbital; the third is often only a branch of the latter.

All these ramifications are superficial in the situation of the masseter, and become deeper seated towards the front of the face, where they are covered by the muscle.

Bichat states, that he could never discover any communications between the right and left nerves; and that he finds the same remark applicable to the nervous system in general.

2. The cervico-facial branch goes obliquely downwards in the substance of the parotid gland, and concealed by the ramus of the lower jaw; at the angle of the bone it comes forwards, lies under the latissimus colli, and divides into branches, which communicate with the superficial cervical nerves, and of which some are distributed above, others below the basis of the jaw. The former, generally two in number, pass over the edge of the bone, come through the parotid gland, run directly across the masseter, and proceed

towards the lower lip, distributing numerous filaments to the skin and muscles, communicating with the other branches of the facial, and with the mental nerve. There may be one or more branches running under the basis of the jaw, and reaching the front of the neck; they communicate with the mental, and with the superficial cervical; the latissimus colli and skin of the neck are the parts principally supplied by them.

Soemmerring enumerates and describes the following branches of the portio dura: 1. Of the ascending branch; a, zygomaticus, or jugalis primus, or temporalis posterior; b, temporalis, or jugalis secundus; c, temporalis prior, or jugalis tertius; d, orbitalis superior, or jugalis quartus; e, orbitalis inferior, or jugalis quintus; f, facialis superior; g, facialis medius, or magnus; h, facialis inferior. 2. Of the descending branch; a, nervus prior facialis infimus; b, nervus marginis maxillæ inferioris, dividing into a superior and an inferior branch; c, d, e, nervi posteriores et superiores subcutanei colli, primus, alter, tertius.

Thus it appears that the facial nerve is distributed over the whole face, in a space beginning with the temples above and extending to the upper part of the neck below: the ear and a part of the occiput are also included. In the cranium it is much firmer than the auditory nerve; but it is considerably firmer in the aquæduct, and in its distribution on the face, than in the cranium. Its multiplied anastomoses are a very remarkable feature in its anatomy: it is not only joined to the neighbouring nerves, as the three branches of the fifth, the nervus vagus, glosso-pharyngeal, and accessory nerves, third cervical and great sympathetic, but its branches frequently communicate with each other, and thus form a network of nervous communications on the face, which, although in reality very considerable, has been rather exaggerated in some plates, as in that of Meckel, *Mém. de l'Acad. des Sciences de Berlin*, tom. vii. In no nerve of the animal life are the communications between the different filaments so numerous.

The auditory or eighth nerve; *nervus auditorius* or *acusticus*; *portio mollis* of the seventh pair.

Several white medullary striæ may be seen in the anterior surface of the fourth ventricle, where their colour distinguishes them from the cineritious matter in which they lie. They are sometimes almost imperceptible, and at others very strongly marked; they vary in number from one to six or seven. They are sometimes radiated, sometimes parallel, and sometimes in the form of a pencil: they may form small bands, or be rounded and prominent. Often they are different on the two sides; being higher or more numerous on one than on the other. Modern anatomists have generally regarded these striæ as the origin of the auditory nerves, and, in fact, some of them usually join these nerves; but, as Prochaska and Soemmerring have remarked, they have often no connection with them, being lost in the crura cerebelli. "In the mammalia," says Gall, "even when they have an auditory nerve much more considerable than that of the human subject, the medullary striæ are entirely deficient. The filaments of the nerve derive their origin in great measure from the cineritious matter so abundant in the fourth ventricle: this matter is more thinly deposited in man, and forms the grey band (*ruban gris*) placed towards the middle and outer part of the ventricle, and forming in the sheep, pig, horse, &c. an elevation of the size of a pea. Consequently this is a true swelling (*renflement*), place of origin, or ganglion for the auditory nerve, which there receives its most considerable enlargement. This ganglion is placed precisely at the spot where the auditory nerve turns round the corpus testiforme of the cerebellum, and its size



size is always proportioned to that of the nerve. Most anatomists, such as Cuvier, Portal, Sabatier, Bichat, are contented with assigning the origin of this nerve to the medullary striae of the fourth ventricle, without even mentioning the "ruban gris," or the oblong elevation in animals. In animals a broad band extends immediately behind the pons from one auditory nerve to the other, and passes over all the ascending nervous fasciculi, excepting those of the corpora pyramidalia. We consider that it consists of communicating fibres from one nerve to the other, and that it forms a commissure between them. It is covered in man by the posterior part of the pons." *Anat. et Phys. du Syst. Nerveux*, p. 105.

The filaments of the nerve are collected together, from the origin just mentioned, into a soft and roundish band, which turns forwards and outwards round the back edge of the corpus rectiforme, and comes in contact with the facial nerve. It then goes more directly outwards, being in size about equal to the third, firmer than the olfactory, but softer than all the others, assumes a more fibrous appearance, and forms a kind of groove, in which the facial is lodged. It enters the meatus auditorius internus, in company with a blood-vessel, and is much smaller than that canal, so that it is contained quite loosely. The rest of its description will be found in the article *EAR*; and its course and distribution are represented in the plates of the ear. It has two very different distributions; one to the cochlea, the other to the semicircular canals and vestibulum. The latter is analogous to the retina formed by the optic nerve; the expansions of the vestibular branch very much resembling that membrane. The distribution on the cochlea may be rather compared to that of the olfactory nerve; yet the softness and shortness of the ramifications are points in which it differs from those of the olfactory, which have a very firm neurilemma, and a long course.

This nerve is distributed exclusively to the organ of hearing; and has no communication with any other nerve.

The four following pairs of nerves, although they arise within the cranium, have much analogy to the spinal nerves; they separate from the general mass, like them, by several distinct threads, and pass by one or more openings in the dura mater. Their origin is referred by Gall to the cineritious substance placed within the part from which they go off; consequently they cannot be regarded as prolongations or productions of the cerebral mass. The nerves, which we have hitherto described, have the threads, produced in the grey substance, united into one fasciculus before they are detached.

The *glossopharyngeal*, or ninth cerebral nerve, arises by several more or less distinct threads immediately below the pons, and below the corpora olivaria. Girardi and Soemmerring have mentioned that filaments may sometimes be traced from the fourth ventricle; but Gall has not been able to discover them. An artery or a vein, or both are generally interposed between it and the *nervus vagus*. It goes under the smaller lobe of the cerebellum and the choroid plexus, with which it is slightly connected, separates more and more from the *nervus vagus*, and enters a peculiar canal of the dura mater. It quits the cranium by a membranous canal in females, and a bony one in males, placed under the meatus auditorius internus, and above the jugular fossa; being separated from the *nervus vagus* by the internal jugular vein. Some anatomists (Anderesch and Huber, quoted by Soemmerring *Neurologia*, § 268.) describe a small ganglion formed just after the nerve has quitted the head, and contained in a groove of the bone; but Bichat

has never met with this. (*Anat. Descriptive*, t. iii. p. 207.) It then goes downwards and forwards over the internal carotid and under the stylo-pharyngeus; afterwards between that muscle and the stylo-glossus. It is connected pretty closely by cellular substance to the former of these two muscles, of which it follows the direction to the posterior part of the tongue.

In this course it produces the following branches. 1. Filaments communicating with the stylo-hyoideal branch of the facial, and with the *nervus vagus*. 2. A branch or two descending over the internal carotid, and united with the pharyngeal branch of the *nervus vagus*, with the nervi molles of the great sympathetic, and the nerves of the heart. 3. One or two branches to the stylo-pharyngeus. 4. Two pharyngeal nerves to the upper constrictors of the pharynx, the tonsil, and the surface of the posterior lateral part of the tongue. 5. Branches forming a plexus about the pharynx, and sending ramifications over the branches of the external carotid.

At the basis of the tongue the glossopharyngeal nerve passes under the stylo-glossus, and on the inside of the hyo-glossus, and is divided into, 1, superior filaments going inwards to the lingualis, where its fibres are united to those of the constrictor isthmi faucium, and to the mucous glands about this part; 2, inferior ones to the hyo-glossus, and to the mucous membrane continued from the back of the tongue to the epiglottis; 3, middle ones distributed principally on the mucous glands. The muscular fibres of the tongue receive very little from this nerve, of which the ramifications become superficial, and supply the mucous surface behind as the gustatory nerve does in front.

The *nervus vagus*, tenth nerve, though commonly called the eighth or *par vagum*, *nerf vocal* of Gall, arises immediately below the glossopharyngeal between the corpus rectiforme and olivare, but nearer to the former than to the latter, by many separate threads, of which the number varies, placed in a perpendicular line. Soemmerring and Santorini speak of its deriving fibres from the fourth ventricle; but Gall denies the existence of these. Sometimes, according to Soemmerring, its origins are arranged in a double series, (anterior and posterior,) like those of the medulla spinalis; sometimes it arises in one mass, like the fifth nerve. The minute threads, by which it arises from the medulla spinalis, are collected into six, eight, or ten larger filaments, which form a thin and flat band, without communicating together, placed under the cerebellum, and going outwards and forwards to a peculiar canal of the dura mater, of which the opening is placed under that of the glossopharyngeal nerve, and separated from it by a distinct fibrous septum. It goes out of the cranium by a peculiar notch in the fossa of the jugular vein; it approaches to the glossopharyngeal nerve in its course, but leaves it again, and passes outwards and forwards close to the jugular vein. The filaments of the nerve remain rather distinct in their passage through the cranium, but they unite at their exit into a single rounded cord, which is sometimes rather swollen and grey, so as to have been taken for a ganglion. It is always closely united, after leaving the skull, to the hypo-glossal, accessory, and glossopharyngeal nerves, by a dense cellular tissue containing no fat, and including also the ascending filaments of the superior cervical ganglion. It is at first situated in front of the hypo-glossal, but soon becomes posterior to that nerve, and quits it to descend along the neck, between and behind the carotid artery and internal jugular vein. A loose but tolerably firm cellular tissue, never containing fat, joins the artery, vein, and nerve together; they are less closely connected to the great sympathetic nerve.



At the lower part of the neck, the *nervus vagus* leaves its situation between the artery and vein, enters the chest, and goes backwards to the posterior part of the bronchi, descending immediately in front of the subclavian artery on the right, and along the back of the arch of the aorta on the left side, and manifestly increasing in size. It goes along the back of the root of the lung, between the bronchus and the pleura, and becomes attached, lower down, to the œsophagus. The left nerve is found towards the front, and the right at the back of this tube, in company with which they penetrate the superior or cardiac orifice of the diaphragm, to be distributed on the stomach in the manner which we shall presently describe.

Its branches may be conveniently arranged under the divisions cervical, thoracic, and abdominal.

*Cervical Branches.*—It communicates with the accessory and glosso-pharyngeal nerves, and then produces the pharyngeal branch, which descends obliquely inwards, crossing the carotid, communicates with the glosso-pharyngeal, and separates about the upper part of the middle constrictor into several filaments, which form the pharyngeal plexus; the latter is augmented by twigs from the superior cervical ganglion, the laryngeal, and glosso-pharyngeal nerves. The branches composing this plexus are tortuous, of a greyish colour, and communicate frequently; they are distributed on the muscles of the pharynx.

The superior laryngeal nerve is larger than the preceding, and arises under it; goes behind the internal carotid, and along the outer side of the superior cervical ganglion, producing some twigs of communication with that ganglion, the hypo-glossal nerve and the plexus just described, and then dividing into two branches. The external (*nervus laryngeus externus*) descends to the lower constrictor, the crico-thyroides, thyroid gland, &c.; the internal (*nervus laryngeus internus*) enters the larynx between the os hyoides and the thyroid cartilage, is distributed on the membrane and glands and some of the muscles of the larynx, and communicates with the inferior laryngeal nerve.

After producing the superior laryngeal, the *nervus vagus* descends along the neck without giving off any other, until it reaches the confines of the chest: it then sends off branches, which join the cardiac plexus, two, three, or more on the right, and generally one on the left side.

The inferior laryngeal or recurrent nerve arises in the chest, but is distributed principally in the neck: it is rather different in the two sides of the body. On the right it arises at an acute angle below the subclavian artery, and turns immediately round that vessel, so as to include it in a kind of loop: it then goes inwards and upwards, under the carotid and inferior thyroid arteries, and ascends in the depression between the trachea and œsophagus to the larynx. From the convexity of the loop two or three cardiac nerves come off, and join the filaments from the inferior cervical ganglion and the *nervus vagus*, forming a remarkable plexus between the subclavian and the trachea. Some pulmonary twigs are then produced, descending in front of the trachea to the pulmonary artery, and following its ramifications in the lung.

As it ascends by the side of the trachea, the nerve sends off twigs to the œsophagus, thyroid gland, and trachea. At the lower part of the larynx, it goes under the inferior constrictor, after giving it some filaments, and often divides here into two or three principal branches, which are spread out on the mucous membrane of the pharynx, and of the larynx, and particularly on the muscles of the arytenoid cartilages, communicating with the branches of the superior laryngeal.

The left inferior laryngeal nerve arises lower down than the right, bends under the arch of the aorta, and consequently forms a more considerable loop. It then ascends in a more perpendicular course, and lies more immediately on the œsophagus, as that tube in the neck is placed rather to the left of the trachea. Its cardiac and pulmonary filaments go towards the back of the heart and pulmonary artery, of which the front is supplied by the right branch.

*Thoracic Branches.*—After the origin of the recurrent, the *nervus vagus* goes behind the root of the lung, and lies in close contact with the posterior surface of the bronchus. Here its filaments are loosened and separated from each other, so that the nerve seems considerably increased in size: they put on a plexiform appearance, and there are sometimes intervals between them occupied by cellular substance and vessels: opposite to the lower end of the trachea several filaments arise, forming a plexus in front of the bronchus and trachea, and pulmonary vessels, (plexus prior nervorum pulmonalium,) and communicating with the branches of the recurrent, and of the inferior cervical ganglion. Some branches go to the back of the trachea, and neighbouring part of the œsophagus, and communicate with the other pulmonary plexus. Behind the bronchus several branches come from the enlarged part of the nerve, and form a considerable plexus, named the pulmonary (plexus posterior nervorum pulmonalium), which receives filaments from the inferior cervical ganglion, and sends numerous branches surrounding the pulmonary and bronchial vessels, and distributed more particularly on the air-tube and its ramifications. Bichat considers that these nerves are distributed entirely on the mucous membrane and glands of the lungs, and not in the proper tissue of the organ; and that they may easily be traced penetrating the posterior membrane of the air-tubes.

The right *nervus vagus*, while it is producing the pulmonary plexus, and afterwards, divides into four or five large branches, which descend along the side and back part of the œsophagus, communicate and divide again, so as to constitute a plexus (plexus nervorum gulæ posterior), and unite again below into a single branch passing behind the œsophagus into the abdomen. On the left side the nerve divides into two or three branches (plexus nervorum gulæ prior), which are united again below, and penetrate the diaphragm on the front of the œsophagus. The two trunks communicate freely on the œsophagus, and send several filaments to that tube, and some to the descending aorta.

*Abdominal Branches.*—The right trunk enters the abdomen on the side and back part of the œsophagus, and soon divides into numerous filaments, which form a considerable plexus on the superior orifice of the stomach, and are then distributed to that organ and to the neighbouring parts. The stomachic branches are ramified first on the back of the cardia, where they are continuous with the œsophageal filaments produced in the chest, then on the posterior surface of the organ. Near the small curvature they are near together, lie immediately under the serous membrane, and are consequently very visible: they diverge towards the great arch, and penetrate the muscular fibres as they descend. Several branches go behind the coronary stomachic artery, communicate with branches of the left nerve, and pass beyond the pylorus to terminate in the neighbouring parts.

Other branches behind these go to the hepatic and gastropiploic arteries: to the right celiac ganglion, the pancreas, duodenum, vena portarum, gall-bladder, and liver, connected with various filaments from the celiac ganglia: others go to the celiac plexus.



## NERVOUS SYSTEM.

The left nerve enters in front of the œsophagus, divides on the cardia into several filaments, which are at first situated superficially under the serous membrane, and go along the small curvature in front of the coronary stomachic artery. Branches from these descend obliquely over the anterior surface of the organ, being first situated superficially, and then penetrating the muscular fibres. They communicate, at the pylorus, with those of the opposite side, and pass on towards the liver, joining the hepatic plexus.

The *nervus vagus*, therefore, supplies the pharynx and œsophagus; the larynx, trachea, and thyroid gland; the arteries of the neck, large vessels of the heart, and the lungs; the stomach, duodenum, liver, gall-bladder, and spleen. It communicates freely with the opposite nerve, with the glossopharyngeal, hypoglossal, accessory, great sympathetic, and first cervical nerves.

*Accessory, or eleventh cerebral nerve, nervus ad par vagum accessorius, nerf spinal.* This, and the two preceding, compose the eighth pair, or par vagum of most authors.

The accessory nerve arises from the upper part of the medulla spinalis, between the anterior and posterior fasciculi of the upper cervical nerves. The point of its commencement is uncertain, and varies from the third to the seventh cervical nerve: it may be different in length on the two sides. It arises by a small point on the side of the medulla, and ascends between the ligamentum denticulatum and the posterior roots of the cervical nerves, receiving at each interval between two nerves an additional branch, arising by three roots, and thereby increasing in size. Sometimes it communicates with the posterior root of the first cervical nerve. As it ascends, it is directed obliquely outwards, and enters the cranium at the foramen magnum: at this part it receives four longer twigs, each of which arises by several minute threads, and then turns outwards to the opening which receives the *nervus vagus*, under which it quits the cranium, sometimes by a common fibrous canal with that nerve, sometimes by a separate one. It communicates, towards the lower end of the canal, with the *nervus vagus*, to which it adheres so closely, that they might be taken for a single trunk. As it quits the canal, it separates from the *nervus vagus*, becomes connected by a dense cellular tissue to the hypoglossus, then leaves it to go behind the internal jugular vein, and afterwards turns outward under the sterno-mastoideus. It traverses the fibres of the posterior part of this muscle, at about one-third from its upper end, becomes more superficial, and then runs along the anterior surface of the trapezius, on which it is lost. Its branches are not very numerous: in its passage through the cranium it divides into an exterior and an interior branch.

The interior (*rameau accessoire du nerf vague*) gives off a superior and an inferior branch, which unite together above the ramifications of the *nervus vagus*, and there receive a considerable branch from that nerve. The union of these three composes the pharyngeal nerve, which is, therefore, formed between the *nervus vagus* and *accessorius*, and which is already described in the account of the former. The trunk then goes behind the *nervus vagus*, closely connected to it, and augmented by two branches from it. Below the origin of the superior laryngeal nerve it divides into several filaments, joining the trunk of the *nervus vagus*, which assumes here a very manifest plexiform arrangement for the reception of these threads. Sometimes it communicates with the hypoglossal.

The exterior branch penetrates the fibres of the sterno-mastoideus, sends two or three branches to that muscle, and communicates here by one or more twigs with the cer-

vical plexus. The remainder of the trunk is lost on the trapezius.

Thus, besides the pharynx, two muscles only, the sterno-mastoideus and trapezius, have branches from the *nervus accessorius*: and these muscles derive branches from other quarters.

The *hypoglossal nerve*, or twelfth, *nervus lingualis medius*; commonly called nerve of the ninth pair, has its origin placed in front of that of the *nervus vagus* and *glossopharyngeus*: it comes from the groove between the *corpus olivare* and *pyramidale*, and arises by ten or twelve slender threads, generally united into three or four fasciculi placed in a vertical line, one under the other, in front of the vertebral artery. They converge towards the anterior condyloid foramen, and penetrate the dura mater by one, two, or three openings; but unite in the canal of the foramen, which is sometimes double. When it quits the cranium, the hypoglossal nerve is connected by a dense cellular tissue to the *nervus vagus*, and placed on its outside: it soon quits this situation to pass obliquely forwards and downwards, becoming constantly more superficial. It lies at first on the internal carotid and the superior cervical ganglion, and afterwards goes over the external carotid and its branches: it is covered by the stylo-hyoideus, the posterior portion of the digastric and the occipital artery, and soon appears between the branches of the internal jugular vein. In this place it forms a remarkable turn, sweeping forwards and upwards under the tendon of the digastric.

Immediately under the cranium it sends a twig to communicate with the arch formed by the junction of the first and second cervical nerves; and it communicates, by one or two filaments, with the *nervus vagus* and *accessorius*. When it begins to bend forwards, a considerable branch arises from its convexity, (*ramus descendens, branche cervicale descendante*;) descends perpendicularly in the neck, along the internal jugular vein, and, about the middle of the part, turns outwards to communicate, by a considerable arch, with a similar branch formed by two twigs of the two first cervical nerves. There is a small plexus at the point of communication. Just before this communication, the descending cervical nerve sends off two twigs to the *omo-hyoideus* and *sterno-hyoideus*. The branches of the plexus are long and slender, and are lost on the *omo-hyoideus*, *sterno-hyoideus*, and *sterno-thyroideus*: it communicates with the third and fourth cervical, and the phrenic nerves.

The hypoglossal nerve lies nearly in company with the lingual artery, where it begins to turn forwards: it penetrates between the *mylo-hyoideus* and *hyoglossus*, and is afterwards separated by the latter muscle from the artery, and enters the substance of the tongue, in which it terminates. It sends a small twig to the *thyro-hyoideus*, and has some communication with the *nervi molles*. When it has arrived under the *mylo-hyoideus*, its filaments are separated, so that it seems to increase in size, and it gives off a great number of branches in a radiated form. 1. A few go to the superior constrictor of the pharynx and the *stylo-pharyngeus*. 2. Five or six very slender, but easily discernible ones, ascend on the external surface of the *hyoglossus*, and communicate freely with each other, as well as with branches of the gustatory nerve. 3. Inferior filaments to the *genio-hyoideus*, *genio-glossus*, and *mylo-hyoideus*. The trunk afterwards penetrates the *genio-glossus*, distributes its filaments in its posterior part, and follows the course of its insertion into the muscular fibres of the tongue, distributing successively to it, as well as to these fibres, other filaments, almost to the point of the organ, but having no concern with the papillæ. In this passage, along the middle of the tongue, the



the hypoglossal nerve lies very near that of the opposite side.

The hypoglossal nerve supplies all the muscles of the os hyoides, the glenio-glossus, and sterno-thyroideus, and the muscles of the tongue. It is connected with the fifth cerebral nerve, with the vagus, the accessorius, the sympathetic, the phrenic, and some cervical nerves. It belongs to the motions of the tongue, and seems to have no connection with the business of taste.

*Anatomy of the Spinal Marrow, and of the Parts connected with it.*—The membranes covering this organ are continuations of those which belong to the brain, and they enter the vertebral canal through the great occipital foramen.

*Dura Mater.*—The canal is lined in the first place by a production of dura mater prolonged to its inferior extremity. This production forms a membranous canal, differing in its form from the bony canal: it is rounded, while the latter is triangular, and consequently broader. Independently, too, of this difference in form, the membranous canal is smaller than the bony one, and consequently unattached to it in the greater part of its surface. A similar disproportion is observed between the membranous canal and the included organ; the latter appearing quite loose in its sheath. Yet there is not more fluid observed here than in the brain.

The outer surface of the sheath corresponds to the canal, but does not adhere to it, as the dura mater does to the cranium: the front of the plates, that meet to form the spinous processes, is covered by periosteum, and the front of the canal is covered by the posterior ligament of the vertebræ. A loose cellular tissue intervenes between the canal and the sheath, except in front, where the latter adheres closely to the ligament. In the sacrum this tissue contains fat.

On each side of the sheath there is a series of small canals surrounding the spinal nerves as they pass through the corresponding foramina. These vary in size, length, and direction, according to the differences of the nerves. They are manifestly enlarged at the foramina, on account of the ganglia formed on the nerves in that situation. They are gradually lost in the cellular membrane on the surface of the nerve, instead of being continuous, as in the head, with the periosteum. The internal surface of the membrane is polished, as in the head, and every where contiguous to the arachnoid. Bichat conceives the polished surface to be owing to a reflection of the arachnoid. Each side offers a series of openings, which are the beginnings of the canals for the nerves; and in the intervals of these, the points of attachment of the ligamentum denticulatum. At the upper end, the sheath is continuous with the dura mater of the cranium: it is perforated, immediately below the occipital foramen, for the passage of the vertebral artery. It terminates below in forming fibrous sheaths for the sacral nerves.

The structure of the membrane is the same as in the brain: yet the fibres are less distinct, and the thickness is not so considerable. The latter diminishes gradually to the end of the canals that contain the nerves.

*Pia Mater.*—The organs contained in the cranium are surrounded by a vascular network, to which the appellation of membrane can hardly be given with propriety. The medulla spinalis, on the contrary, is most closely enveloped by a firm membrane forming with it one substance; and to this, in spite of the differences of texture between the two parts, anatomists give the name of pia mater. If this covering be slit up lengthwise, and the medullary substance be then scraped away, the former is left alone, under the ap-

pearance of a dense semitransparent membrane; or if, after dividing the medulla spinalis, we press it towards the cut surface, the medulla may be squeezed out, and the membrane is left. Its external surface corresponds to the arachnoid, which does not adhere to it, but may be separated throughout by inflation. The spinal arteries lie on it, and distribute their branches over it. At the sides it is continuous with the neurilema of the nerves, and gives attachment to the ligamentum denticulatum. The internal surface corresponds every where to the medullary substance, and seems to be continuous with it, so that the two form one organ. It consists of a thick, solid, and very firm tissue, with an appearance, towards the sides, of distinct fibres. Its density is greater in the lower than in the upper part of the organ. But few vessels belong to the substance of the membrane; a great number, after being first minutely subdivided, enter the medulla, and this probably contributes to its very firm adhesion. It has a yellowish-white colour, different from the pure white of the medulla, which is seen when the membrane is divided.

Immersion in cold water for a few days makes it rather harder; but prolonged maceration softens it. It contracts and curls up considerably under the action of boiling water, and thereby squeezes out the medulla from its cut end. If openings are previously made in it, a similar phenomenon is exhibited at these. It resists putrefaction for a long time; and assumes a yellowish colour when dried. Acids and heat corrugate it; and the former afterwards reduce it to a fluid state.

It seems to be analogous to the neurilema of the nerves. It does not commence abruptly: the pia mater acquires on the pons a greater consistence than it has in other parts of the cerebral organ: this increases on the corpora olivaria and pyramidalia, where it seems to have nothing in common with the pia mater, except its continuity.

The *ligamentum denticulatum* is a narrow, whitish, and dense layer, affixed to the side of the medulla spinalis; and apparently continuous with its proper membrane. It lies between the anterior and posterior origins of the spinal nerves throughout the whole length of the organ. The outer edge presents a series of small pointed processes, from which the name denticulatum was derived, attached to the dura mater. These are narrow rounded cords, very dense, and are fixed at the intervals between the exits of the nerves. They are short above, and longer below. The outer edge of the ligament presents a series of concavities between these. Bichat contends, that this organ is distinct both from the arachnoid and the proper membrane of the medulla; indeed its density and firmness sufficiently distinguish it from the former; and it is connected to the latter, according to the anatomist just mentioned, by a cellular tissue. At the point of adhesion to the medullary membrane it is very thin, and becomes gradually thicker towards its outer edge. It is not easy to state any thing positive about its nature; its texture is very close, but not manifestly fibrous. It has the effect of fixing the medulla spinalis in its situation.

*The Arachnoid.*—This membrane passes from the skull at the occipital foramen, and descends into the vertebral canal.

It is almost unattached on its internal surface: a small number of cellular threads form its only connection to the proper membrane of the spinal marrow. Hence, if the spinal marrow with its coverings be carefully taken out of the canal, the dura mater laid open, and air impelled under the arachnoid, the latter will be raised throughout and form a tube interrupted only at the points where it furnishes pro-



longations to the nerves. This want of adhesion on the internal surface distinguishes it essentially from the cranial portion of the membrane. Its external surface is free, like that of the arachnoid in the head, and in contact with the dura mater. It affords at the sides a conical covering to each of the spinal nerves, accompanying the nerve to its fibrous canal, and then reflected to the dura mater.

*The Medulla Spinalis.*—The term spinal marrow, by the import of the words, denotes the nervous mass contained in the vertebral column from the foramen occipitale downwards; but anatomists have differed in respect to its superior boundary. Varoli, Willis, Bartholin and others, include under this expression the medulla oblongata, pons, crura cerebri, and even higher parts; Haller makes the occipital foramen the boundary. Soemmerring, Bichat, and Chaussier make it extend to the back edge of the pons, and consequently include the corpora pyramidalia and olivaria, and the origins of the three last cerebral nerves. The latter anatomist calls the part situated within the cranium “le bulbe supérieur du prolongement rachidien.” This division is an arbitrary one; the groove forming the separation is not made by any interruption of the ascending fasciculi, but by the thickness of the transverse strata of the pons, and does not exist on the posterior surface; it is much less strongly marked in the mammalia than in man, and, as these transverse strata are wanting in birds, amphibia, and fishes, the separation also does not exist. We think, therefore, with Gall, that the foramen of the occiput is the best distinction. “We cannot indeed say, that the organization of the part is changed immediately on its becoming contained in the cranium. Some pairs of nerves are still detached from it, in a manner similar to the origin of the cervical; the line of demarcation occupying the middle of the organ is continued beyond this point on the posterior surface, but interrupted in front by the decussation of the corpora pyramidalia. The spinal marrow is intimately connected to the parts, which begin at the foramen magnum. But in this part the anterior fissure is interrupted, the nervous mass becomes swollen in a very visible manner in man, and still more so in the mammalia. The first rudiments of the nerves called cerebral, of the brain, and of the cerebellum, are very distinctly perceived at this part. These reasons seem sufficient for making the spinal marrow end above at the beginning of the great swelling or of the pyramids.” *Anat. et Phys. du Syst. Nerv. p. 48.*

It were to be wished, as this author states, that the term marrow (medulla or medullary substance) were entirely discarded, as there is no more analogy in structure, than in functions, between the medullary texture and the two matters that compose the nervous system. In the medulla spinalis, as in other parts of this system, we meet only with the grey gelatinous matter, occupying the middle of its whole length, and nervous fibres comprising the white exterior part.

The nervous cord terminates below about the first or second lumbar vertebra. In common language the spinal marrow is spoken of as a prolongation or continuation of the medullary substance of the cerebrum and cerebellum; if it is meant by such expressions to denote any actual formation of the one part from the other, any dependence of one on the other, or any thing further than the simple fact of connection, we entirely agree with Gall in considering them as incorrect. The spinal marrow does not become smaller in proportion as more nerves are sent from it; on the contrary, it is largest in the situations where the largest nerves come from it, as at the origins of the nerves of the extre-

mities; and this fact is particularly observable in birds. Again, in animals, it has been often noticed that the spinal marrow is larger in proportion to the brain than in man. In the same way the nerves are much more considerable in their relative size to the brain in animals, than in man. All these facts shew the independence of the various organs on each other, although anatomists have still continued to describe the large and small spinal marrow and nerves of man and animals equally as prolongations of the brain. Whence comes the spinal marrow of acephalous monsters? Further proofs of the independent existence of these organs are afforded by comparative anatomy. In the lower classes of animals, as worms and caterpillars, there are as many origins of nerves or ganglions, as there are rings or segments; these knots of cineritious matter are joined together by nervous branches; and form a nervous cord studded at intervals with small tumours of various form and size, but all divided into two parts, so that all is double. The number and size of the nervous threads proceeding from these swellings are always in a direct ratio to the size of the latter. In fishes, amphibia, and birds, the principle is the same; there is no essential difference; only the ganglions are in general closer to each other, forming with their uniting bands a cord nearly uniform in size, but swelling out in distinct knots, wherever large nerves pass off; and if closely examined, we may perceive throughout alternate swellings and contractions. This is very visible in the fowl, each pair arising from cineritious substances, and communicating with those on each side by connecting branches. The same law obtains in the mammalia and in man, although the facts are not so immediately evident. Where the large nerves of the extremities arise, the ganglia are larger and more abundantly supplied with the grey pulpy substance. But, besides these principal swellings, there are others at the origins of the particular nerves (one for each nerve), less manifest than in insects, but still sufficiently perceptible. Gall and Spurzheim demonstrated these swellings in the calf, and assert, that they are also very perceptible in the human subject, particularly at the back part, from which the largest fasciculi arise. If the dura mater and arachnoid coats are removed, and the side of the spinal marrow viewed in profile, the outline is distinctly undulated.

A very distinct fissure runs along both the anterior and the posterior surface of the spinal marrow in their whole extent; the anterior is broader and more conspicuous, the posterior deeper. Into both of these the vascular membrane descends. The former is interrupted, at the beginning of the medulla oblongata, by the decussation of the pyramids. The two halves of the spinal marrow are united at the bottom of the fissures by a nervous layer, which consists behind of two fasciculi directed longitudinally; on the front the fasciculi are transverse, and directed from each side towards the middle line, but they do not come opposite to each other, those of one side ending at the intervals between the opposite ones. Gall and his associate consider these nervous layers as the apparatus, by means of which the two halves of this part of the nervous system communicate with and act on each other, in the same manner as takes place in the brain and cerebellum by their several commissures.

Some authors have admitted the existence of two lateral grooves; but we reject these, with Gall and all other correct modern anatomists.

The production of the spinal nerves has been generally represented, as if the medulla were only a medium through which they are derived from the brain. This representation is quite ungrounded; there is a quantity of cineritious matter



## NERVOUS SYSTEM.

in each lateral half of the medulla spinalis, from which the nervous filaments are produced: when a transverse section is made of the medulla spinalis, this cineritious matter represents on each side an arch, of which the convexity is turned towards the median line.

The existence of a canal in the middle of the spinal marrow has been casually mentioned by several writers. Gall and Spurzheim give the following account of it. They first observed it in examining a case of spina bifida, attended with hydrocephalus. "In order to know positively if there existed any communication between the sac and the internal part of the spinal marrow, we divided the latter transversely in the neck; it exhibited its natural appearance. Blowing gently through a pipe on the cut surface, we perceived an opening as large as that of a common quill in each half of the spinal marrow, separated by the commissure. They were the openings of two canals, which, by dividing lower and lower down, were found to terminate about three inches above the end of the spinal marrow, having no communication whatever with the sac. Doubtful whether this appearance might be the effect of disease, we examined the part in children and adults. We found the same structure, with this difference only, that in the adult and older children these canals did not open so freely as in younger subjects. The structure is most easily shewn in children just born. In other respects they are alike. If we continue to blow gently into these canals, from below upwards, and if, after having opened by this operation the length of six or eight lines in the spinal marrow, we expose only four or five, in order to maintain the opening, we may follow these canals through the medulla oblongata, the pons, crura cerebri, and as far as the optic thalami, in which they form on each side a cavity as large as an almond when blown up. They are closed at the anterior margin of the thalami, at the commencement of the corpora striata, and they have no communication with the cavities of the brain. Their surface is smooth; but they contain no fluid." P. 72.

The filaments by which the spinal nerves arise are numerous and delicate; they unite into two, three, or more fasciculi, which go out by two or more openings of the dura mater; the anterior and posterior fasciculi of each nerve, separated at first by the ligamentum denticulatum and above by the spinal accessory nerve, approach to each other, but they penetrate the membrane separately, and are contained in two distinct tubes.

The anterior origins consist of very numerous fine roots, which unite together into larger fibres, and these again into still larger ones, which join ultimately into two cords. The posterior are simple and round, and run to the opening of the dura mater without joining the neighbouring ones. The lowest thread of one nerve often joins the highest of the nerve immediately succeeding on the posterior aspect of the medulla spinalis.

The posterior origins are larger and more numerous than the anterior, throughout the whole vertebral column. Gall and Spurzheim explain this by the greater force required for extending than bending the trunk; and consider, that the extended condition of the body after death indicates this preponderance in the extensor muscles. P. 66.

The two first cervical nerves have on the front an ascending and a descending fasciculus; in all the other nerves all the fibres are directed from their origins downwards to the openings of the dura mater. The posterior origin of the second nerve goes entirely downwards. Hence the two first spinal nerves go out transversely from their origin, while all the rest run obliquely downwards. The former

are the shortest, within the sheath; the others increase in length as we trace them downwards. The inferior and longest are loosely contained, lie in close apposition to each other, are tortuous in their course, but not connected by any communications: they form below the termination of the medulla spinalis, a large bundle of threads called the cauda equinea.

In younger individuals, the fibres, by which the spinal nerves arise, follow each other very closely; in the adult these are small intervals. The arrangement, the height, size, and number of the fibres are often different on the two sides.

After passing through the openings of the dura mater, and receiving a firm fibrous covering, the posterior origins of the spinal nerves swell out, at different distances from their commencement, into small reddish oval ganglia, to which the anterior fasciculus is closely connected by cellular tissue, without being included in it. These ganglia have usually been described in general terms, without noticing the mode of their formation. Scarpa demonstrated, that they belong to the posterior fasciculus only. Yet we meet sometimes, particularly in the neck, with such a firm and red interweaving of the anterior fasciculi, that we are tempted to regard them as gangliform productions.

The size of the nerves is much below that of the common lateral holes of the vertebral column, through which they go out of the vertebral canal; cellular tissue and vascular ramifications fill up the rest of the space.

The medulla spinalis serves for conveying sensations to the brain, and for producing voluntary motions. Hence pressure on this organ, or division of it, causes the same effects on the sensations and motions of the parts, which receive nerves below the situation of the pressure or division, as the same operations, on the nerves, or as injuries of the brain. The powers of sensation and motion are sometimes recovered when the medulla spinalis is restored to its former state: this depends on the degree of injury it has received. Although the same nerves are employed for sensation and motion, the latter power may be destroyed while the former remains. The effects of injury are confined to the parts whose nerves arise below the point affected; the sensibility and mobility of other parts is not impaired.

That the medulla spinalis is only a conducting organ, and not the immediate seat of sensation and volition, is proved by the cessation of these functions, when its connection with the brain is cut off, although it remains uninjured in other respects. The suddenly fatal effect of cutting through the spinal marrow high up in the neck, depends on the paralysis of the respiratory muscles caused by this operation: if the section be above those cervical nerves which give rise to the phrenic nerves, the operation is fatal; if below, the animal may survive for a longer or shorter time. By maintaining artificial respiration, we may also keep an animal alive after having divided the medulla spinalis above the origin of the phrenic nerves.

The same law does not obtain in the medulla spinalis as in the brain, with respect to the paralysis of the muscles on the side opposite to that of the injury. On this point there have been contrary opinions. Galen has not expressed himself very clearly; but he seems to state that division of one-half of the spinal marrow paralyzes the muscles of the same side. Soemmerring confirms this statement; but Haller contradicts himself in different parts of his *Elementa Physiologiae*. In the first volume of *Medico-Chirurgical Transactions*, Dr. Yelloly mentions a case of tumour passing on the side of the spine which it had rendered carious: the paralysis was much more considerable on the same side with the tumour,



## NERVOUS SYSTEM.

tumour, than on the opposite; p. 195. Mr. Astley Cooper divided one-half of the spinal marrow in a dog, immediately below the occiput; the muscles were paralysed on the same side. P. 198.

According to Galen, a longitudinal incision in the middle of the spinal marrow has no paralyzing effect.

Pressure or irritation of the part excites very severe pain: if it comes on gradually, as in disease, it does not cause pain, but gradual loss of feeling and motion in the parts below.

For an account of the effect which irritation of this part has on the voluntary muscles, see **MUSCLE**.

*Description of the Nerves of the Medulla Spinalis.*—There are thirty pairs of these: viz. eight cervical, of which the first passes between the occiput and atlas, and the last between the seventh cervical, and first dorsal vertebra; twelve dorsal, of which the first passes under the first rib, and the others, in succession, under the remaining ribs; five lumbar, bearing the same relation to the lumbar vertebrae, as the dorsal nerves do to the ribs; and five sacral, of which four penetrate the four sacral foramina, and the fifth the foramen formed between the sacrum and the coccyx.

Sometimes there are only twenty-nine pairs; and sometimes only twenty-eight: in which case the last ganglion divides into two nerves.

*First cervical Nerve.*—The distribution of this nerve accords generally with that of the cervical, from which it differs in being much smaller; in often wanting the posterior root, which, when it exists, is not in the same line with the corresponding roots of those nerves; in having its anterior branches much smaller than the posterior; and in having no connection with the cervical plexus. These circumstances have led many anatomists to separate this from the remaining cervical nerves, and to describe it under the name of sub-occipital nerve: sometimes, indeed, it is classed with the nerves arising in the head; of which, in the common arrangement, it would form the tenth, in that which we have adopted from Soemmerring and Vicq d'Azyr, the thirteenth.

It arises from the side of the upper part of the medulla spinalis, just under its superior enlargement, and about half an inch below the origin of the hypoglossal. Seven or eight filaments unite into two or three fasciculi in front, and two or three threads only behind, form the two origins, which are separated by the ligamentum denticulatum, and sometimes by the spinal nerve, which more frequently goes behind both origins of this nerve, and sometimes communicates with the anterior. They penetrate the dura mater at the point where the vertebral artery passes, and run close to that artery in the same canal, on leaving which, a small greyish enlargement, similar to what we shall describe in the other cervical nerves, but less strongly marked, is observed. The two fasciculi united together form a single trunk, lodged in the excavation behind the articular process of the atlas, running on the inner side of the vertebral artery, and divided immediately into an anterior and a posterior branch. The former is the smallest, runs along the articular process of the atlas, between it and the rectus lateralis, from behind forwards, then descends in front of the transverse process, and unites with a branch of the cervical plexus, so as to form an arch. It produces only small twigs, to the lateral and anterior recti, to the superior cervical ganglion, and to the nervus vagus and hypoglossus.

The posterior and larger branch goes backwards and upwards, through the triangular space bounded by the obliqui and rectus posticus major, and divides, after a short course, into, 1, an internal occipital branch; 2, an external occipital

branch; and 3, a cervical branch, which are distributed on the obliqui, the posterior recti, and the complexus. Instead of these three, six or even seven twigs may be produced immediately from the trunk.

It appears from this description, that the first cervical, or the sub-occipital nerve, is principally concerned in the motions of the head.

Of the remaining seven cervical nerves, the anterior origins are placed in a vertical line, and consist of two portions or threads, which arise from the medulla spinalis by seven or eight filaments, distinct at the point of origin, but immediately uniting to form the two threads. These origins increase in size from above downwards. The posterior roots, much more considerable than these, arise in a vertical line from a clearly marked groove, by a variable number of threads: there are commonly three or four in the second, six or seven in the three following, and eight or nine in the remainder. Between the roots of two neighbouring nerves, there is very commonly a middle thread, which bifurcates, one branch joining the upper, and the other the lower nerve. Like the anterior origins, these become larger as they are situated lower down: and the threads converge from their origin towards the dura mater, so as to acquire a triangular figure.

The two roots, separated at first by the ligamentum denticulatum, and above by the spinal nerve, approach towards each other as they pass outwards. They have a more oblique and larger course in the canal, in proportion as they are placed lower down; the first goes out opposite to its origin, but each of the succeeding penetrates the dura mater below this point: the difference between the origin and the exit of the last is not less than the depth of a vertebra.

When they come to the orifice of the fibrous canal which is to transmit them, the two origins are united, and enter: but a thin partition still separates them, forming, as it were, two tubes. After a short course, the filaments of the posterior root swell into a greyish, dense, oval body, extremely analogous in its appearance to the ganglia of the organic nerves. The canal is enlarged for lodging this swelling, in which the anterior root has no concern. The latter joins the cord after the formation of the ganglion, and forms with it a trunk, proportioned in size to that of the two roots which give it origin: this trunk passes through a very short course, when it ends by dividing into an anterior and a posterior branch.

The *second cervical nerve* goes out backwards between the atlas and the second vertebra, and divides into the branches of which the posterior is the most considerable.

The latter passes under the lower edge of the obliquus major, turns over it upwards and backwards under the complexus, and perforates that muscle at its insertion in the occiput to become subcutaneous. It communicates, at the edge of the obliquus major, with the sub-occipital and the second cervical nerves; and sends branches to the complexus and splenius. Where it becomes superficial, the trunk is sometimes called the great occipital nerve: it divides into a vast number of branches, distributed to the occipital muscle, and to the skin of the posterior, lateral, and upper parts of the head, reaching as far as the termination of the frontal branches of the ophthalmic nerve, with which they communicate.

The anterior branch turns over the articulation between the atlas and the second vertebra towards the front, passes between their transverse processes, covered by the levator scapulae, the splenius, and intertransversalis prior, and divides into, 1, upper branches, of which one forms an arch with the anterior



## NERVOUS SYSTEM.

anterior branch of the first cervical, and others go to the superior cervical ganglion: 2, lower branches, of which one or two go to the rectus major anticus, and two or three, rarely one, to communicate with the second cervical, and thus contribute to the cervical plexus.

The *third cervical nerve* divides, like the preceding, immediately on its escape from the vertebral canal, into two branches, of which, however, the posterior is smaller by half than the anterior.

The posterior turns immediately backwards, over the articulation, between the second and third vertebræ, first descends a little, then ascends, and becomes attached to the anterior surface of the complexus, on which it mounts a little, penetrates it and the trapezius, and becomes subcutaneous towards the upper part of the neck. It communicates with the posterior branch of the second nerve, gives branches to the complexus and neighbouring muscles, and ends at last in the upper part of the neck, and back of the head.

The anterior branch goes forwards and outwards, covered by the splenius and levator scapulæ, gives a filament to the superior cervical ganglion, forms an arch above and below with the contiguous nerves, and then joins the cervical plexus.

*Fourth cervical Nerve.*—Its posterior branch goes backwards, along the articular process, penetrates between the insertions of the complexus and semispinalis colli, descends between these two muscles, distributing to them several filaments, and then pierces the muscle, to terminate on the skin of the neck. It communicates with the third. The anterior branch goes first outwards, then turns forwards, round the anterior tubercle of the fourth vertebra, sends a communicating branch to the superior cervical ganglion, forms nervous arches with the branches above and below it, and then enters the cervical plexus.

The *cervical plexus* is formed by the union of the anterior branches of the second, third, and fourth cervical nerves, which, as they leave the vertebral column, communicate with the superior cervical ganglion, then divide each into two branches, which communicate respectively, so as to form nervous arches at the side of the neck, from which other branches arise that are again united more externally. By the upper branch of the second cervical nerve, this plexus is connected with the sub-occipital; and by the lower branch of the fourth, with the first nerve of the brachial plexus.

There is a marked interval in the neck between these two plexuses; the cervical is placed at the back edge of the *sterno-mastoideus*, and corresponds to the second, third, and fourth cervical vertebræ: it lies in front of the posterior scalenus, and on the outside of the carotid artery, jugular vein, and nervus vagus. A large quantity of cellular tissue is placed about it, and many blood-vessels and lymphatic glands are interwoven with it, occupying often the areolæ formed by its communications. It produces twigs of communication with the cervical ganglia, and with the spinal nerve, and then divides into the following branches.

1. Descending cervical nerve, arising by two roots that remain separate for some time, from the second and third cervical, passing downwards and inwards, and communicating in the manner already described with the descending branch of the hypoglossal nerve.

2. Phrenic or diaphragmatic (*nervus septi transversii*), arising from the lower part of the plexus. The fourth nerve furnishes its most considerable root, and a slender twig is sometimes added by the third. The brachial plexus also adds two or three twigs lower down in the neck. It descends on the front of the anterior scalenus, to which it is

closely tied by cellular tissue, enters the chest between the subclavian vein and artery, passes inwards and forwards in the mediastinum before the great vessels of the lungs, and then becomes connected to the pericardium, over which it runs, covered by the pleura, to the convexity of the diaphragm. Its white colour enables us to trace its course, without any dissection, by simply opening the chest: the pleura is so thin, that the nerve is seen through it on either side of the pericardium.

The right nerve is more anterior, and follows a straighter course: it divides, before reaching the diaphragm, into several branches united by communicating filaments, and then diverging. They give twigs to the convexity of this muscle, and others which descend through the opening occupied by the vena cava to the inferior surface, whence they communicate with branches of the celiac ganglia. Other branches, longer than these, pierce the muscle, join the arterics, and are distributed with them, communicating also with the celiac nerves.

The left phrenic nerve lies farther back in the chest, and is longer, because it turns round the point of the heart. Its branches, like those of the former, are distributed on both surfaces of the diaphragm: some go with the œsophagus into the abdomen, and communicate below with the celiac. Ganglia have been described at the point of connection between the phrenic and celiac.

In the neck, the phrenic nerves give twigs to the rectus major, the scalenus, and, according to some, to the thymus; but the latter are doubtful. It communicates on each side with the inferior cervical ganglion, but sends nothing to the pericardium or lung.

Innumerable experiments on living animals have shewn that this nerve is concerned in the motions of the diaphragm. Injury or irritation of it induces dreadful symptoms; convulsions of the diaphragm, anxiety, distress of breathing, &c. When it is divided, the motion of the diaphragm ceases, and great difficulty of breathing follows; the abdomen falls in when air is taken into the lungs, and swells on expiration. Division of the spinal marrow above the origin of the nerves, which produce the phrenic, is instantly fatal, as all the respiratory muscles are instantly paralysed: below that point, it is only fatal after the lapse of hours, or even days; because the diaphragm can still act.

3. Descending external cervical branches, two, three, or four in number, quickly subdivided into numerous other ramifications, which pass over the clavicle and acromion to the integuments and muscles on the chest and shoulder, as the pectoral and deltoid, (*supraclaviculares interiores & medii*; *sub-claviculaires & sub-acromiens* of Bichat,) behind that bone into the axillæ, where they are distributed to the *omohyoideus*, *subscapularis*, and *serratus anticus*, (*sub-claviculares*, *sub-claviculaires* of Bichat,) and deeper in the neighbourhood of the cervical muscles, particularly of the levator scapulæ, along the edge of which a large branch descends ramified in it, and in the neighbouring muscles, (*cervicaux profonds*, Bichat).

4. Ascending branches. Of these there are two principal; a mastoid and an auricular, particularly produced from the second cervical nerve. The mastoid branch (*nervus occipitalis minor*) ascends along the posterior edge of the *sterno-mastoideus*, between the integuments and the splenius, to the back of the mastoid process, where it divides into several filaments, distributed to the integuments on the side and back of the head, to the external ear and the occipital muscle, and communicate with the auricular branch of the facial, and the great occipital branch of the second cervical.

The



## NERVOUS SYSTEM.

The auricular nerve (*superficialis colli*, Soemmerring) is a very considerable trunk, twice as large as the preceding, first directed outwards as it leaves the plexus, then bent forwards over the back edge of the sterno-mastoideus, and crossing the upper part of its external surface, in close contact with the muscle, obliquely upwards and forwards. It reaches the anterior edge of this muscle, and divides, opposite to the angle of the jaw, into, 1, anterior auricular branches, spread out on the surface of the carotid, giving some filaments to its substance, and then ramified on the external ear: one of them communicates, in the gland, with the facial nerve. 2. Posterior auricular branches, of which there are sometimes two, sometimes only one, ascending in front of the sterno-mastoideus and of the mastoid process, and distributed on the ear and neighbouring integuments.

5. Middle cervical branches. There is either a single trunk or two, produced chiefly by the third cervical, reflected over the back edge of the sterno-mastoideus, and distributed to the skin and latissimus colli. The superior filaments communicate with the lower twigs of the facial nerve.

The *fifth, sixth, seventh, and eighth cervical nerves*, so far agree in their distribution, that they may be considered together. They divide into two branches, as they quit the foramina of the vertebral column. Their posterior branches are remarkable for their smallness, when compared to those of the preceding nerves: they go backwards between the semispinalis colli and complexus, penetrate the splenius and trapezius, and are lost on the skin.

The anterior branches, particularly of the three last nerves, are very large: they pass obliquely downwards and outwards from the side of the spine, between the scaleni muscles, which cover their exit from the vertebral foramina, and very soon communicate together. The fifth communicates also with the fourth cervical, and the eighth with the first dorsal. Each sends a filament to the cervical ganglia: from the fourth, the phrenic derives a root already mentioned; and various twigs are spent on the surrounding muscles: they then unite to compose the brachial plexus.

The *brachial or axillary plexus* is composed of the anterior branches of the four last cervical nerves, and of the corresponding branch of the first dorsal, which ascends from the chest. Its extent is considerable; broad at its origin, contracted in the middle, and again expanded towards its termination. The fifth and sixth cervical nerves unite immediately into a common trunk, which descends very obliquely outwards. The eighth cervical and first dorsal join into one trunk, which runs nearly horizontally. The seventh cervical passes between these two trunks as far as the first rib, before it joins them. The plexus descends, in the form of a flattened fasciculus, between the subclavius and the upper portion of the serratus anticus: it then expands, and divides into numerous branches passing downwards, as we shall describe presently.

The different nerves are all joined together in this plexus, mutually giving and receiving filaments; so that the branches produced from it may be considered as arising from all the five spinal trunks that enter into its composition. In this great plexus another smaller is observed, produced by the union of the origins of the median and ulnar: several small twigs of a soft texture descend from the trunk of the former, and, after a more or less intricate plexiform arrangement, join the latter, constituting the plexus brachialis minor of Scarpa, who first described it. See the excellent representations of the whole axillary plexus in his *Annot. Anat. lib. i. tab. 2. figs. 2 and 3*.

At its origin, the brachial plexus is placed between the

scaleni, of which the anterior conceals this origin, especially towards the lower parts. It then is surrounded by the abundant loose cellular tissue of the axilla below the clavicle, lying first between the subclavius and the first rib, and then upon the serratus: it goes through the axilla to the upper and inner part of the arm. Both pectoral muscles, the subclavius, and the clavicle, cover it in its passage through the cavity. Towards the upper part, the axillary vein is in front, the artery in the middle, and the nerves behind. In the cavity of the axilla, the nerves produced from the plexus surround the artery, almost like a sheath. Besides the branches of communication with the cervical ganglia, and the phrenic nerve, and the muscular twigs already mentioned, the plexus produces the following nerves.

1, 2. *Anterior and posterior thoracic nerves*, accompanying the arteries of the same name, and distributed on the pectoral and serratus muscles, and through the former to the gland and skin of the breast.

3. *Suprascapular nerve* (*scapularis, sus-scapulaire*), going backwards, through the notch of the same nerve, to the dorsum of the scapula, and distributed to the subscapularis, supra and infraspinatus, and teres minor.

4. The *axillary nerve* passes under the lower edge of the scapula, and round the head of the humerus, in company with the posterior circumflex artery. It is lost on the surface of the deltoid. Its branches are sent to the subscapularis, teres major and minor, rhomboidei, infraspinatus, latissimus dorsi, and deltoid. It communicates with the cutaneous pectoral nerves arising from the dorsal; and it sends off the external cutaneous branch of the shoulder, which goes to the skin of the outer part of the shoulder, and has communications with superficial branches of the radial nerve. Sometimes one, two, or more separate branches come from the brachial plexus to the subscapularis muscle.

5. The *internal cutaneous* (*cutaneus medius* of Soemmerring) is the smallest branch of the axillary plexus. It lies in the axilla, between the median and ulnar nerves, then runs along the inner side of the arm, under the brachial aponeurosis, and in the same general direction with the brachial vessel, as far as the bend of the elbow. It lies, however, more superficially and posteriorly than the vessels, and generally very close upon the basilic vein. It sends off some very inconsiderable twigs among the cellular substance, to terminate on the skin. One of them is more considerable, and descends towards the internal condyle. Near the middle of the arm, or rather higher, the trunk divides into an internal and an external branch.

The external branch penetrates the aponeurosis, goes obliquely downwards and forwards over the median nerves, as far as the end of the biceps, then passes over the bend of the elbow, about its middle, and continues its course superficially as far as the wrist, distributed to the integuments, and communicating with the neighbouring superficial nerves. The trunk of this nerve is connected at the elbow with the superficial veins, going generally behind those vessels; and the ramifications on the fore-arm are interwoven with the plexus of cutaneous veins.

The internal or larger branch is continued in the direction of the trunk, and accompanies the basilic vein. This divides at the bend of the elbow, and is distributed superficially on the fore-arm, over the ulna.

6. The *external cutaneous or musculo-cutaneous nerve* (*nervus perforans*) is of a middle size between the preceding and the other brachial nerves: it separates from the plexus, opposite to the common origin of the biceps and coracobrachialis, and is directed outwards. It descends obliquely, and penetrates the middle of the coraco-brachialis muscle, then



then goes between it and the brachialis internus, and escapes at the outer edge of the lower end of the biceps. It then lies parallel to the tendon of that muscle, under the median cephalic vein, and becomes superficial. It descends through the forearm, between the aponeurosis and the skin, in the direction of the radius, and reaches as far as the wrist. The musculo-cutaneous nerve sends off muscular branches to the coraco-brachialis, biceps, and brachialis internus. A small twig sometimes joins it to the median. Numerous small twigs are distributed superficially in the forearm, but have nothing remarkable about them. The trunk terminates at the wrist by dividing into two branches, of which one goes backwards, principally to the thumb; and the other forwards, to the eminence formed by the muscles of that member.

There are communications in the forearm, particularly near the wrist, between the internal and external cutaneous trunks.

The trunks of the two nerves just described, (the internal and the musculo-cutaneous,) are deeply seated in the arm; but become quite superficial in the forearm; being placed, with all their branches, in the subcutaneous cellular tissue, in company with the superficial veins. At the bend of the elbow they are closely connected to those veins, particularly to the median basilic and cephalic: the trunks usually pass behind those vessels, but branches occasionally go over them. These are the nerves exposed to injury in venesection.

7. The *median nerve* (radial of some authors) is the largest branch of the plexus, after the radial, and comes from the lower and anterior part of it. The trunks, from which it arises, surround the axillary artery. The median nerve descends along the inner side of the arm, in company with that artery, but placed more superficially, to the elbow, which it passes on the inner side of the biceps, and behind the production which its tendon sends to the aponeurosis of the forearm. Here it lies parallel and close to the artery, but on its outside. The trunk then plunges under the muscles of the forearm; it goes first behind the pronator teres, and then between the two flexors of the fingers along the middle of the limb, and arrives in this situation at the wrist. Here it becomes more superficial, and passes with the tendons under the annular ligament of the carpus, becoming apparently increased in size. Having entered the palm of the hand, where it is covered by the palmar aponeurosis, it divides, opposite to the carpal ends of the metacarpal bones, into the branches, which will be presently described.

In the arm, the median nerve distributes no branches; it sends off, in the forearm, several muscular branches to the numerous muscles which occupy the internal or palmar aspect of the limb, and one of which penetrates the interosseous ligament, near the pronator quadratus, to be distributed on the back of the hand. A cutaneous palmar branch comes off near the wrist to be distributed on the skin of the palm.

In the situation already mentioned, the median nerve divides into five digital branches, which may come off all together, or through the medium of two principal primary ramifications; an external forming three, and an internal two secondary branches.

The first (reckoning from the outer or radial side) digital branch goes obliquely outwards, and gives several branches to the muscles of the thumb; these sometimes come off in one trunk from the median itself. The first digital nerve passes along the radial side of the thumb to its extremity. A small twig arising at the first phalanx goes to the back of the thumb.

The second digital nerve is at first parallel to the former,

but separates from it, and runs along the ulnar edge of the thumb, giving posterior branches, and terminating, at the extremity of the organ, by communications with the former.

The third follows the first lumbricalis, to which it sends a twig, as far as the root of the forefinger, and then runs along the radial edge of that finger to its extremity.

The fourth goes to the interval between the fore and middle fingers, and then divides into two secondary branches, which follow the opposed edges of their fingers.

The fifth is distributed in an analogous manner to the ulnar edge of the middle, and the radial edge of the ring finger.

The trunk of the median nerve, and the digital branches produced from it, are covered by the palmar aponeurosis, as well as by the skin of the palm. The latter pass in company with the digital arteries of the *arcus sublimis*; they are further accompanied by these arteries in their passage along the sides of the fingers, but they lie nearer to the inner (medial) or anterior part of the fingers. All of them give branches to the lumbricales muscles, and posterior ramifications turning round the fingers towards their back part; numerous filaments are sent to the skin of the fingers, but the trunks, which retain a considerable size to the ends of the organs, are principally distributed to the cutaneous palmar convexities of the last phalanges, where they communicate together, and bestow on the parts that more acute sensibility, which qualifies them to act in a more especial manner than the rest of the skin, as organs of touch. The same observations will apply to the distribution of the digital branches of the ulnar nerve.

8. The *ulnar or cubital nerve* separates from the inner or back part of the brachial plexus, and descends almost perpendicularly over the triceps muscle, to which it is closely tied by cellular tissue, at some distance behind the brachial vessels. It goes behind the elbow, in the channel between the internal condyle and the olecranon, and passes, in the interval between the two origins of the flexor carpi ulnaris, to the front of the forearm. Here it becomes connected to the ulnar artery, and passes in company with it, but rather on the inside, between the flexor ulnaris and flexor profundus. Within two or three inches of the wrist it divides into two branches, a palmar and a dorsal.

In its course along the arm it sends off some slender twigs to the skin and muscles. There is a more considerable branch given off in the axilla, distributed to the integuments covering the triceps and the olecranon, communicating with the internal cutaneous, and described by Soemmerring, under the name of cutaneous internus, as a distinct branch of the plexus. From four to six muscular branches are produced between the olecranon and the bifurcation of the trunk.

The palmar branch (volaris) is the largest of the two, into which the nerve divides; and it continues its course, in company with the ulnar artery, in the direction of the trunk. It accompanies that artery in its passage over the annular ligament and on the inside of the os pisiforme, and enters the palm of the hand; where it is placed, with the artery, under the palmar aponeurosis. It divides into a deep-seated and a superficial branch.

The deep-seated palmar branch goes under the lumbricales and the flexor tendons, and bends outwards or towards the thumb, so as to describe an arch, from the convexity of which numerous branches go off to the muscles of the little finger, to the interossei, to the abductor indicis, adductor and flexor brevis pollicis.

The superficial palmar branch, after sending a twig to the muscles of the little finger, divides into an external and an internal digital branch. The former, which is the largest, goes to the interval between the ring and little fingers,



## NERVOUS SYSTEM.

having communicated with the last digital branch of the median; it is then subdivided into two, which are distributed on the opposed edges of the two fingers. That which goes to the ulnar side of the ring finger communicates at the end of the finger with the last digital branch of the median. The internal branch goes over the muscles of the little finger, sending branches to them, to the palmaris brevis, and to the integuments, and then runs along the ulnar side of that finger.

The course and distribution of these digital branches correspond in every respect with those of the median.

The dorsal branch of the ulnar nerve goes obliquely backwards, between the flexor ulnaris and the bone, and divides into two branches; one running along the edge of the last metacarpal bone, and distributed to the abductor minimi digiti, and to the skin of the hand and little finger; the other passing between the last and the third metacarpal bones, and then separated into two branches ramified on the opposed edges of the little and ring fingers. These ramifications send numerous twigs to the back of the two last fingers; and form a communication with the radial on the ring finger.

9. The *radial nerve* (muscular spiral), the largest belonging to the upper extremity, goes from the upper and back part of the axillary plexus, descends obliquely on the inner side of the humerus, covered by the other nerves, and by the brachial vessels, until it arrives at the interval between the second and third heads of the triceps. It penetrates the interval between these, in company with the profunda major humeri artery, lies immediately in contact with the bone, and passes close behind it from the inner to the outer side of the arm, covered in its passage by the whole thickness of the triceps. It comes from behind the bone at the anterior, lower, and outer part of the arm, and lies in the bottom of the deep fissure between the brachialis internus and the supinator radii longus: it descends over the elbow, holding the same relative position to these muscles, and divides.

It gives off, before it passes behind the humerus, several large branches to the triceps, and a cutaneous nerve, called by Soemmerring subcutaneous internus, to the integuments covering the inner head of the triceps, and communicating with the other cutaneous ramifications. Another cutaneous branch arises on the front of the arm, comes out between the brachialis internus and the supinator longus, and descends under the skin to the wrist, where it communicates frequently with the other superficial nerves. In the same situation arise two or three other muscular branches; the nerve, diminished to nearly one-half its original size, is now divided into an anterior and a posterior branch. The former is the smallest, and goes obliquely downwards, under the supinator longus, and on the outside of the radial artery, which it accompanies. About the lower third of the forearm it turns outwards, quits the artery, and passes between the tendon of the supinator longus and the bone; it divides into several branches distributed superficially over the back of the hand, of the thumb, the fore and middle fingers, and the radial side of the ring finger.

The posterior branch, considerably larger than the preceding, goes obliquely outwards, under the supinator longus, and the radial extensor, and pierces the substance of the supinator brevis, which it traverses from above downwards, turning obliquely round the head of the radius. In the substance of the latter muscle it divides into several branches. It gives branches to the muscles just mentioned; its ramifications in the supinator brevis may be divided into anterior and posterior. The latter go to the extensor ulnaris, extensor communis digitorum, and to the indicator; the former to the posterior and deep-seated muscles of the forearm.

The *dorsal nerves* have an anterior origin composed of two or three filaments, and a posterior of more numerous threads but uncertain in their number. They descend obliquely, and are longer in the canal, in proportion as they are situated lower down. These origins are smaller than those of the lower cervical nerves, or of the lumbar. From the common trunk, which is short, two branches (a dorsal and an intercostal) arise in each nerve.

The dorsal branches are much smaller than the intercostal; they go immediately backwards between the transverse processes, and under the multifidus spinæ, and divide into an internal and external series of branches. There is one or two internal branches produced from each nerve; they penetrate the multifidus, and the muscles that cover it, giving branches to them, and then terminate on the integuments, to which however all of them do not reach. The external branches are the largest, go obliquely outwards, escaping at the triangular spaces under the levatores costarum, and then between the longissimus dorsi and sacrolumbalis. Afterwards they run under the latissimus dorsi, trapezius, rhomboidens, &c. and end on the skin; having given branches to the different muscles, near which they pass.

The intercostal branches resemble each other in some points, and differ in others. They come out of the vertebral canal under the corresponding ribs; the first under the first rib, and the last under the twelfth. They all go nearly horizontally outwards, except the first; pass in the interval of the two transverse processes, and then between the two ribs; and communicate with the thoracic ganglia by one or two branches, which turn inwards and upwards, on the sides of the vertebral column. The intercostal branches then continue their course outwards, covered only by the pleura, to the angles of the ribs, where they pass between the two strata of intercostal muscles, approach the lower edge of the upper rib, and run on in the intercostal interval, where they are distributed as we shall describe.

1st *Intercostal Nerve*.—This differs much from the succeeding ones. Immediately after its origin it goes obliquely upwards and outwards over the first rib, and joins the axillary plexus, as we have already described. Where it turns over the rib, it sends off a small branch, of which the course and distribution correspond to those of the following nerves. This branch goes along the under surface of the first rib, and arrives at the anterior extremity of the first intercostal interval, where it penetrates the muscles, and is distributed on the upper and anterior part of the chest. It gives branches to the intercostal muscles of the first interval.

The 2d *intercostal nerve* runs along the inner surface of the second rib, through the posterior third part of the intercostal interval, and then divides into an intercostal and a brachial branch, previously sending a branch to the back part of the intercostal muscles. The former continues its course along the second rib to the front of the chest, and passes out between the margin of the sternum and the external intercostal muscle, to terminate on the pectoralis major. The latter pierces the external intercostal muscle, passes through the axilla, and descends along the inner and back part of the arm to the elbow, being lost on the integuments.

The 3d *intercostal* goes along the lower edge of the third rib to the middle of the bone, and there divides like the former. Its intercostal branch is distributed like that of the former: the brachial branch pierces the external intercostal muscle, goes along the lower part of the axilla, and is soon lost upon the arm.

The 4th, 5th, 6th, and 7th branches are nearly alike in their distribution. Each of them runs along the lower edge of



of its corresponding rib to about the middle of the chest, giving in its passage many branches to the intercostal muscles. They then divide into intercostal branches, which follow the lower edges of the ribs, supply the intercostals and triangularis sterni, pass out at the edge of the sternum, and are lost upon the pectoralis major, mammary gland, and integuments, and into external pectoral branches which come through the intercostal muscles, and terminate on the neighbouring skin and muscles.

The 8th, 9th, 10th, and 11th branches follow the same course, towards the posterior part of the chest, as the last, supply the intercostal muscles, and divide into external and internal branches. The latter continue in the course of the trunk, and, at the ends of the intercostal spaces, pass over the origins of the diaphragm, and enter the abdominal parietes between the transversus and the obliquus internus, to both of which they send branches. They reach the rectus, and there divide into twigs, which enter that muscle, and others which penetrate its sheath to end on the integuments. The external branches go through the external intercostal muscles, and are distributed to the surrounding muscles and skin.

The 12th branch sends first a communicating twig to the first lumbar nerve, soon leaves the last rib to go outwards and downwards, passes along the front of the quadratus lumborum, giving branches to it and to the diaphragm, and divides, at the outer edge of the muscle, into a superficial abdominal branch, which first goes between the two oblique muscles, giving them branches, then penetrates the outer, and descends on its surface as far as the crista of the ilium; and a deep-seated abdominal branch, passing downwards and forwards between the obliquus internus and transversus, as far as the edge of the rectus.

**Lumbar Nerves.**—The first pair passes out between the two upper lumbar vertebrae; and the fifth between the fifth vertebra and the sacrum. Their origins are much closer together than those of the dorsal nerves; and are all found in that part of the medulla which is within the last dorsal and first lumbar vertebra. All of them are much longer within the canal than the dorsal nerves, and they become longer in proportion as they are lower down: the last nerve arises opposite to the first vertebra, and its length is equal to that of the intervening space. The lumbar nerves increase in size from above downwards.

Immediately after quitting the canal, each divides into a posterior or lumbar and an anterior or abdominal branch.

1st Lumbar nerve. Its posterior branch is large, goes backwards between the transverse processes, gives branches to the muscles situated upon the spine, and terminates on the integuments of the loins and buttock.

The abdominal branch goes forwards, and is hidden by the origin of the psoas; it communicates with the branches of the lumbar ganglia, receives the communicating branch from the last dorsal nerve, and sends one to the anterior branch of the second lumbar nerve. It then enters the lumbar plexus.

2d Lumbar nerve. Its posterior branch, like that of the former nerve, goes backwards, and is distributed to the multifidus spinæ, and to the integuments of the upper and back part of the thigh. The anterior is hidden by the psoas, communicates with the lumbar ganglia, and with the nerve above and below it, so as to contribute to the lumbar plexus.

3d Lumbar nerve. The lumbar branch is small, but distributed in a manner similar to the former: the abdominal resembles in all respects that of the second nerve.

4th and 5th Lumbar nerves. The posterior branches

are small, and terminate in the multifidus, and common origin of the sacrolumbalis and longissimus dorsi, without becoming superficial.

The abdominal branches communicate with the lumbar ganglia: that of the fourth enters into the lumbar plexus, while the fifth descends into the pelvis to join the sacral plexus.

**Lumbar plexus** (plexus lombo-abdominal of Bichat.) This is produced, as we have already mentioned, by the union of the abdominal branches of the lumbar nerves, which form, on leaving the vertebral column, a series of communications with each other, behind the psoas muscle, and in front of the transverse processes. It is narrow above, but grows broader below. It begins, in the former situation, by the connection of the first lumbar with the last dorsal nerve; and it ends by three nerves, of which one descends into the pelvis, to communicate with the sacral plexus, and give off the superior gluteal nerve; one passes through the foramen ovale; and the third descends in front of the thigh. Besides these, the plexus sends off other branches to the upper part of the thigh, and to the neighbouring muscles.

1. External or musculo-cutaneous branches. There are usually three, situated between the peritoneum and the iliacus internus; they run over that muscle to penetrate the abdominal muscles, and terminate on the skin. There is considerable variety in their origin and course. The superior penetrates the upper part of the psoas, passes obliquely downwards and forwards, in front of the quadratus lumborum, and then continues along the crista of the ilium, giving branches to the quadratus, iliacus, and transversus. It penetrates the latter, and divides into an outer branch, which is lost on the lower part of the three broad muscles of the abdomen, and an inner, which descends between the transversus and internal oblique to the anterior superior spine of the ilium. Then it continues behind the aponeurosis of the external oblique, in the course of the crural arch, to its ring, and terminates in filaments expanded on the integuments of the groin, pubes, and even scrotum.

The middle branch comes from the plexus near the former, penetrates the psoas, passes in front of the quadratus and iliacus to the crista ilii, pierces the transversus, and soon after the obliquus internus, and is lost upon these muscles. One branch follows the crural arch to the ring, and is distributed like the corresponding branch of the former nerve, and more particularly to the scrotum.

The inferior branch arises lower down, passes over the iliacus to the anterior and superior spine of the ilium, and descends into the thigh between that process and the anterior and inferior spine. It divides into two branches, which penetrate the fascia lata, and are distributed to the integuments of the anterior and outer part of the limb: the inner reaches nearly to the knee.

2. Internal branch (génito-crurale of Bichat). It arises from the upper part of the plexus, descends in the substance of the psoas, and then penetrates that muscle entirely, so as to lie on its surface, covered by peritoneum. It descends to the crural arch and divides into two branches. The internal of these is the largest; it follows the spermatic vessels through the ring, and terminates on the integuments of the inner part of the thigh and of the scrotum. The internal goes with the vessels behind the arch, and is lost in the skin of the thigh.

3. Inferior or crural branches. The lumbar plexus, after sending off the nerves already described, ends in three large trunks distributed to the lower extremity.

a. The anterior crural nerve (cruralis; femoralis prior) is



## NERVOUS SYSTEM.

the most external of the three trunks: all the lumbar nerves, except the fifth, contribute to its formation. Completely detached from the plexus at the level of the fourth lumbar vertebra, it follows the course of the outer edge of the psoas, concealed by it above, and partly uncovered below. It descends to the front of the thigh, under the crural arch, in front of the common mass formed by the union of the psoas and iliacus, and on the outer side of the femoral artery, from which it is distant about a quarter of an inch. Below the arch it divides into a great number of branches; some of which are superficial, the others deep-seated. There are great varieties in the arrangement of the trunk: sometimes it is single as far as the arch; sometimes the divisions begin about its middle: often the superficial branches are separate through the whole course of the trunk, and merely lie contiguous to it. Several small twigs come off in the abdomen, form a network, and are afterwards lost upon the iliacus internus; others go about the crural artery; but the latter are frequently deficient.

The cutaneous branches of the anterior crural (from two to six in number) are the smallest and least numerous of its ramifications. The point of their origin from the trunk varies: after a short course under the fascia, they pierce it, and are lost upon the skin of the inner and anterior part of the thigh, where they reach as low as the knee.

The muscular branches are numerous and large, but the number varies: they may be divided into external and internal. The former go outwards in the space between the iliacus, sartorius, and rectus, and then between the latter and the cruralis. We may notice the following: 1, some branches to the lower end of the iliacus; 2, three or four to the sartorius, partly lost in it, partly penetrating that muscle to terminate superficially; 3, a large branch to the rectus; 4, three or four branches to the vastus externus; 5, an equal number to the cruralis; 6, a branch to the tensor vaginæ femoris.

The internal branches have the following distribution: 1, several to the vastus internus, of which the inferior descends low on the muscles, before entering its substance; 2, some to the pectinalis; 3, a cutaneous branch, descending at first in front of the femoral artery, then separating from it to follow the inner edge of the sartorius as far as the knee: it gives some twigs to that muscle, and terminates on the integuments; 4, the largest of these external branches is called the internal saphenous nerve, from its accompanying the great saphenous vein. This nerve lies close to the artery on its outer side; it passes the knee joint between the sartorius and the bone, and joins the saphenous vein on the inside of the leg. In the thigh it sends branches to the surrounding muscles; its twigs are distributed in the leg to the skin, and they reach on the foot to the ankle, or even the great toe.

*b.* The *obturator* nerve arises particularly from the second and third lumbar; sometimes also from the fourth. It descends between the psoas and the last lumbar vertebra, and traverses obliquely the upper and lateral part of the pelvis, accompanied by an artery and vein of the same name, and surrounded by much cellular tissue. It passes out through the hole under the pubes, and lies between the pectineus and the adductor magnus, where it divides into an anterior and a posterior branch. Before this division it only sends off one twig near the notch of the bone. The two branches just mentioned are distributed to the adductor muscles, vastus internus, obturator externus, and skin.

*c.* The large branch joining the sacral plexus (nerf lombo-sacré of Bichat). This trunk descends obliquely into the pelvis, and produces, before it joins the sacral plexus, a

considerable nerve for the glutei muscles (the superior gluteal nerve). This nerve receives some twigs from the sacral plexus, then goes out of the sacro-sciatic notch, above the pyramidalis, and divides into several filaments for the gluteus medius and minimus.

The *sacral* nerves are commonly five, but sometimes six pairs. The first pair comes out through the first sacral foramen, and the last at an opening formed between the sacrum and the coccyx. They all arise close together, from the considerable swelling which terminates the medulla spinalis, and within a space not greater than the interval of the two vertebrae; yet their origins are perfectly distinct. Each nerve, as in the case of the other nerves of the spinal marrow, has a distinct anterior and posterior origin, composed of several separate threads. They descend perpendicularly, and are very long within the canal, because the spinal marrow terminates at the second lumbar vertebra, and each nerve must go from this point to its respective sacral foramen, before it passes out of the sheath of dura mater. They unite at the aperture of the latter membrane; one of the fasciculi then forms, as in the other vertebral nerves, a small oval ganglion, and the common trunk passing from this divides into two branches, an anterior and a posterior. The ganglia of the sacral nerves are contained in the bony canal, instead of being situated, as those of the other spinal nerves are, at the external apertures. The ganglia of the upper nerves, however, are nearer to the openings than those of the lower.

The first pair is as large as the last lumbar nerve; they gradually decrease to the fifth, which is very small, considerably smaller than the first cervical.

The anterior branches decrease successively in size, from above downwards, like the trunks themselves: they go out of the canal by the anterior sacral foramina. The posterior foramina transmit the posterior branches, which are comparatively very small.

*First sacral Nerve.*—The posterior branch is very small and short: it communicates with the second, and is distributed to the muscles on the back of the bone, and to the skin. The anterior branch, which is large, communicates with the sacral ganglia by two considerable but short filaments, then descends obliquely outwards, and joins, above the pyramidalis, with the first lumbar nerve above, and the second sacral below, to contribute to the sacral plexus.

*Second sacral Nerve.*—Its posterior branch is distributed to the muscles occupying the back of the sacrum, and extends beyond them to the posterior surface of the gluteus magnus. The anterior branch comes out between two portions of the pyramidalis, communicates with the sacral ganglion, and crosses the muscle obliquely to join the sacral plexus.

*Third sacral Nerve.*—The posterior branch is larger than those of the preceding nerves, joins the nerve above and below it, penetrates the gluteus, and is distributed to the skin of the buttock. The anterior communicates with the sacral ganglia, and joins the plexus, communicating with the two nerves immediately adjoining.

*Fourth sacral Nerve.*—Its posterior branch is the largest of all produced from the sacral nerves. It descends obliquely outwards, communicates with the two branches, between which it is placed, gives filaments to the gluteus maximus, and terminates in the integuments of the buttock. The anterior branch communicates with the ganglia, and joins the sacral plexus.

*Fifth sacral Nerve.*—Its anterior branch passes out between the sacrum and coccyx; it communicates with the fourth, but has no other share in the sacral plexus. It goes to the levator



## NERVOUS SYSTEM.

levator and sphincter ani, and to the coccygeus. The posterior branch, which is very small, is distributed on the integuments at the back of the anus.

The *sacral plexus* is formed by the fifth lumbar, and the four superior sacral nerves. The former descends obliquely; the first and second sacral nerves are oblique in the same direction, but the third and fourth go nearly transversely, they unite in front of the pyramidalis, and receive a communicating branch from the fifth nerve. The result of the union is a single flat and broad nervous trunk, of which the cords are variously interwoven with each other, as they are in the interior of all nerves: the structure is particularly manifested here, on account of the size of the parts.

The plexus lies on the pyramidalis; the vessels of the pelvis, the rectum, bladder, uterus, and a considerable quantity of cellular tissue, lie upon it. On the inside it is bounded by the sacral foramina, and it ends on the outside in the trunk of the great sciatic; the edge of the sciatic notch may be regarded as the boundary.

The branches may be divided into anterior and posterior, besides the communications with the ganglia already mentioned.

*Posterior Branches.*—1. The inferior gluteal nerve arises from the posterior and lower part of the sacral plexus, particularly from the second and third nerves, near the commencement of the sciatic nerve. It goes out of the pelvis below the pyramidalis, and produces the following branches: 1, several to the anterior surface of the gluteus maximus; 2, to the lower part of the gluteus maximus, and to the integuments of the upper and inner part of the thigh, of the perineum and penis; 3, the crural branch, which is the largest of all, descends in front of the gluteus, to which it gives branches, and then along the back of the thigh, under the fascia, and over the muscles, which arise from the tuberosity of the ischium. It produces several cutaneous branches, which penetrate the fascia, and are lost in the skin. The trunk divides at the ham into two or three branches, which terminate in the integuments of the leg.

2. The pudendal nerve (*nervus pudendorum*, *nervus genitalis*) comes from the lower and back part of the plexus, principally from the third and fourth nerves, goes downwards and inwards, and passes, in company with the pudendal artery, in the triangular interval between the two sacro-sciatic ligaments. It divides into a superior and an inferior branch. Before the division a branch from the anterior part of the sacral plexus generally joins the trunk, and a small twig or two go to the obturator internus.

The inferior branch ascends along the inner side of the tuberosity of the ischium, parallel to the superior; then passes between the erector penis and the accelerator urinæ, and divides into numerous filaments, which are distributed to the muscles of the anus and of the perineum, to the urethra and to the scrotum.

The superior branch ascends on the inside of the ramus of the pubes, as far as the symphysis, goes between the bone and the corresponding crus of the penis, to the upper surface of the organ, where it becomes the *nervus dorsalis*, or superior penis. It runs along the back of the penis to the glans, and divides into numerous branches, distributed to it and to the prepuce. In its course, the trunk sends branches to the obturator internus and accelerator, to the urethra, and to the integuments of the penis. In the female, the inferior branch is much larger than the superior; it passes along the perineum, leaving twigs as it goes, then turns upwards into the labium, supplying the perineal muscles, and ends in the mons Veneris. The superior branch, which is small,

has an analogous distribution to that of the male subject; it terminates upon the clitoris.

The anterior branches of the sacral plexus are very variable in size and number, but are in general small and numerous; they arise from the lower part of the plexus, and especially from the third and fourth nerves. They may be named after the parts which they are distributed to.

The hæmorrhoidal branches ramify on the whole length of the rectum: they appear to end partly in the muscular fibres, and partly on the mucous membrane.

The vesical nerves pass along the side of the rectum, and are partly derived from the hæmorrhoidal. They terminate on the bladder, prostate, and vesiculæ, and can be followed in the female to the urethra.

The uterine and vaginal nerves ascend by the side of the rectum, diverge, and are distributed to the whole length of the vagina. The upper ones go to the neck and body of the uterus, but in much smaller number than to the vagina. They are connected with the vesical nerves.

All these nerves, which are small and very numerous, are so minutely divided, and so much interwoven with each other, that we give only a general view of them. They are also very intricately connected with the abdominal and sacral ganglia, and from this union results the hypogastric plexus, which we shall describe afterwards.

The sacral plexus generally produces one or two branches, passing over the lesser sacro-sciatic ligament to join the pudendal nerve.

The *sciatic* or *ischiatric* nerve (*nervus ischiadicus*), the largest trunk in the body, is the true termination of the sacral plexus; and there is such complete continuity between them, that we cannot assign any exact limit. All the sacral nerves entering the plexus contribute to the formation of the sciatic. It descends in front of the pyriformis, and passes through the lower part of the great sciatic foramen, between the edge of that muscle and the bone, then goes along the back of the limb towards the knee. Sometimes two trunks go from the plexus, instead of one; the smaller penetrates the fibres of the pyriformis, and joins the other at the back of the pelvis. The sciatic trunk lies first in the interval between the tuberosity of the ischium and the great trochanter, and then is found nearly in the middle of the back of the thigh, between the biceps and the other flexors of the knee, and rather in front of them. Where it comes out of the pelvis, it is covered by the gluteus maximus; lower down by the long head of the biceps and the semitendinosus. It lies upon the gemini and the obturator internus, upon the quadratus femoris, and the posterior surface of the adductor magnus; it is every where surrounded, but particularly in the thigh, by a large quantity of cellular and adipous substance.

The trunk of the nerve continues in the same course through the ham, where the name of popliteal is given to it. It lies between the tendons of the biceps and semitendinosus, covered externally by the fascia, placed over the popliteal vein, with which it is not in contact, and imbedded in much fat.

The branches of this trunk are numerous, and consist of, 1, several, as it quits the pelvis to the obturator internus, gemini, and quadratus; 2, some, which are not constant, to the gluteus maximus; 3, two or three to the long head of the biceps, one of which extends towards the knee, and is lost on the skin; 4, a branch to the short head of the same muscle; 5, to the semitendinosus and semimembranosus; 6, to the adductor magnus.

Several of these produce cutaneous filaments, varying in length and distribution, penetrating the fascia, and reaching below



## NERVOUS SYSTEM.

below to the leg. These, with the branches of the inferior gluteal nerve, cover all the back of the thigh.

The sciatic nerve divides into two trunks; a smaller external one, called the peroneal nerve; and a larger internal one, the posterior tibial nerve. The situation of this division is not always the same; it may take place at the back of the pelvis, or in the middle of the thigh. The two trunks run close together, connected by cellular membrane, but easily separable by dissection, and they begin to diverge on the lower third part of the thigh. The outer branch goes towards the head of the fibula, and the inner continues in the direction of the sciatic trunk.

**External branch, or peroneal nerve.** This descends by the side of the lower end of the biceps, goes behind the outer end of the gastrocnemius, the outer condyle and the joint, then turns forwards between the fibula and the peroneus longus, and divides into two branches: but it previously sends off several small nerves: *viz.* 1, an articular branch sent off near its origin, descending between the femur and the biceps, giving some branches to that muscle, and terminating on the outside of the knee; 2, a considerable cutaneous branch, arising before the nerve has arrived at the condyle (*nervus communicans tibiæ*, or *cutaneus longus posterior tibiæ*), descending over the outer head of the gastrocnemius, to which it gives branches, accompanying the ramifications of the lesser saphena vein, running along the outer edge of the tendo Achillis, and uniting at the bottom of the leg with the external saphenal branch of the posterior tibial nerve; 3, a smaller cutaneous nerve sometimes wanting.

The two branches, into which the peroneal nerve divides at its termination, are the anterior tibial, and the superficial peroneal.

The superficial peroneal (*musculo-cutaneæ* of Bichat) descends between the extensor longus digitorum pedis and the peronei muscles, and then on their surface to about the middle of the leg, when it penetrates the fascia, and passes over it to the foot. It sends branches to the muscles just mentioned, and cutaneous twigs to the lower and outer part of the leg. The trunk divides at the foot into an internal and external superficial branch, which are distributed to the integuments of the back of the foot, and of the toes, communicating on the inside with the *nervus saphenus* of the anterior crural, and on the outside with the superficial branch of the posterior tibial.

The anterior tibial branch perforates the upper extremity of the peroneus longus and extensor communis, and descends in front of the anterior tibial artery, and in company with it to the back of the foot, where it ends by dividing into an internal and external deep-seated branch. The trunk sends off a few muscular branches in its course; the two nerves in which it terminates on the foot are distributed to the extensor brevis and interossei, and some even reach the toes.

The posterior tibial nerve (*nervus tibialis*), considerably larger than the peroneal, continues in the same course as the trunk through the hollow of the ham, covered by the fascia of the leg, and separated from the popliteal vessels by much fat. It goes between the two heads of the gastrocnemius, behind the knee joint and the popliteus muscle, then passes between the latter and the edge of the soleus, along the back of the tibia, in company with the posterior tibial artery, between the tibialis posterior and extensor longus digitorum, which are in front of it, and the soleus, which is behind. At the lower part of the leg it becomes nearly superficial, is placed at the inner edge of the tendo Achillis, and behind the internal malleolus, descends into the sole of the foot at the concavity of the os calcis, where it is covered by the abductor pollicis, and terminates by dividing into an external

and an internal plantar nerve. It gives origin, in this course, to the following branches.

The external saphenal nerve descends in the interval of the two heads of the gastrocnemius, and then on the outer edge of the tendo Achillis, giving off several twigs principally to the skin, and accompanying the branches of the external saphena vein. It unites below with the posterior cutaneous branch of the peroneal, and continues to descend, much increased in size, on the outside of the leg, under the fascia; it goes behind the external malleolus, then runs forwards on the outer edge of the back of the foot as far as the last metatarsal bone, where it terminates by dividing into two branches, of which the internal runs over the short extensor and is distributed to the back of the two last toes, communicating with the external branch of the anterior tibial nerve, the external continues along the outside of the foot and little toe. Previous to its division, the trunk produces many branches which go under the tendo Achillis, and the skin on the outside of the heel.

Considerable branches to the gastrocnemii, soleus, plantaris, and popliteus. One penetrates the upper opening of the interosseous ligament, and is lost in the front muscles.

Slender and long branches to the lower and front part of the soleus, and to the deep-seated muscles at the back of the leg.

Some cutaneous twigs towards the lower part of the leg; the largest of these goes to the sole of the foot, and is distributed between the skin and fascia.

Branches to the abductor pollicis and flexor accessorius just before the division of the trunk.

The two plantar nerves run horizontally forwards in the sole of the foot, supply the different muscles of this part, and terminate on the toes, each of which receives two branches. These run along the sides of the under surface of the toes, in company with the arteries, and have a distribution entirely analogous to that of the digital nerves in the hand.

The internal is the largest of the two plantar nerves; it runs above the abductor pollicis, and by the side of the flexor longus, to the middle of the foot, where it divides into four branches. The first of these, towards the inside, goes to the inner edge of the great toe; the three succeeding ones, that is, the 2d, 3d, and 4th, go respectively to the intervals between the great toe and the 2d, between the 2d and the 3d, and between the 3d and 4th; each of them divides into two branches, which are distributed to the opposed edges of those toes.

The external plantar nerve passes between the flexor brevis and accessorius towards the outside of the sole, and divides into two branches; a superficial one, which gives a branch to the outer edge of the fourth toe, and two branches to the little toe; and a deep-seated one, that terminates on the deeper muscles of the foot.

*Great sympathetic Nerve* (*sympatheticus, sympathicus, or intercostalis*). In conformity with the principle, that the brain is the common origin of all the nerves, the great sympathetic has been derived indirectly from the brain, and immediately from the spinal marrow; and the plexuses of the viscera have been represented as a continuation of the same nerve; but this opinion is so irreconcilable with the anatomical facts, that the best anatomists and physiologists have called it in question. Winslow observes concerning the filaments of the 5th and 6th pairs, which have been regarded as the origin of the great sympathetic, that they seem rather to ascend from the ganglion to those nerves, and that the angle of their union with those pairs is turned forwards. Winslow also regards the twigs, which go from the sympathetic



## NERVOUS SYSTEM.

thetic to the spinal nerves, as mere branches of communication.

Soemmerring regards the sympathetic as a nerve existing by itself; he states that the nerve of the 6th pair is larger between the point, at which the filament joins it, and the abductor muscle, than between the former and the brain; he notices also the principal differences between it and the cerebral nerves, particularly that it no where forms a trunk proportioned to its branches; and concludes that it is not connected with, or dependent on, the brain. Bichat has expressed himself still more clearly to the same effect, both in his *Récherches sur la Vie et la Mort*, and in his *Anatomie Générale*.

The description of the sympathetic has been drawn up in conformity with these views, following the nerve from above downwards, as those of the head and spinal marrow are described. In the *Anatomic Descriptive* of Bichat this plan has been no longer preserved. He describes the ganglia separately, and the branches that go from each. We shall adopt that method. The series of ganglia, that compose this nerve, are placed upon the spine, and are distinguished, according to their situation, into cervical, thoracic, lumbar and sacral; they are all connected together by branches of communication, and they are joined to all the spinal nerves and several of the cerebral, by communicating filaments.

When viewed as a single nerve, in which manner it is described in all anatomical works, except the *Anatomic Descriptive* of Bichat, it consists of a thread, for the most part slender, interrupted by numerous swellings or ganglia.

The cervical ganglia are usually two in number; but sometimes three.

The superior, first or great ganglion, is remarkable for its size; it is constantly found. It is placed on the side of the front of the vertebral column, immediately under the head. It lies on the rectus major anticus, behind the internal carotid artery, with the par vagum and the hypoglossal nerve on the outside of it, connected to all these parts by cellular substance. Its extent and figure are very variable; but it is always largest in the middle, and gradually smaller towards either end. It begins a little below the carotid canal; and it may terminate at the 3d, 4th, 5th, or 6th vertebra of the neck. When short it is broad; when long, narrow. The colour is a reddish-grey.

Two branches, or a single one afterwards divided into two, go from its upper end into the carotid canal, where they separate, and include the artery between them. One of these joins the carotid branch of the pterygoid nerve, and sometimes goes on to the abductor nerve after this union. The other communicates with the last mentioned nerve in the cavernous sinus; and this is the filament commonly regarded as the origin of the great sympathetic nerve. These two branches adhere closely to the internal carotid artery, and give some twigs to the coats of that vessel; the ganglion also produces other slender filaments, which run upon the artery, and follow its ramifications.

There is only one inferior branch, of which the size is various, but never considerable. The boundary between it and the ganglion is not always very clearly marked. It descends on the surface of the rectus major and longus colli, to the inferior cervical ganglion. The carotid artery, jugular vein, and par vagum, lie in front of it; to these, as well as to the muscles behind, it is connected by a tolerably close cellular tissue.

The external branches are four in number, arising either separately, or by one or two trunks, and communicating with the three upper cervical nerves.

The internal branches exhibit numerous varieties in num-

ber, size, and distribution. They are expanded on the vertebral column, and, after sending numerous filaments to the rectus major and longus colli, terminate on the pharynx and larynx. They are very small. They come either from the ganglion or from its inferior branch, and are distributed on the back of the pharynx, where they communicate with the glosso-pharyngeus, and on the larynx and thyroid gland.

The anterior branches are the most important in their distributions; they are the most numerous, and offer the first examples of those intricate interweavings peculiar to the nervous system of the ganglia, which make their dissection very difficult.

The highest and shortest of these communicate with the facial and hypoglossal nerves, and the par vagum.

Next to these come the nerves that form the carotid plexuses, sometimes called, from their soft texture, *nervi molles*. They have a reddish colour and knotted appearance; arise from the ganglion in one, two, or more trunks, and join the common carotid just at its division. Their ramifications descend along the trunk, and ascend with the branches of the external carotid, forming intricate plexuses, which adhere very closely to the arterial coats, and receive twigs from the glosso-pharyngeal, facial, and nervus vagus. These arterial plexuses differ much in their appearance, consisting sometimes of conspicuous ramifications, while they can hardly be traced at others. From the plexuses formed by the conjunction of these with the pharyngeal and laryngeal nerves, twigs proceed to the two lower constrictor muscles of the pharynx, to the thyroid gland, stylo-pharyngeus, stylo-glossus, thyro-thyroideus, and crico-thyroideus.

The superior cervical ganglion produces lastly the superior cardiac nerve, or *nervus cordis superficialis*; which we shall describe presently with the nerves of the heart.

Middle cervical ganglion (*ganglion thyroideum*). This is often wanting. When it exists, it is situated between the 5th and 6th cervical vertebrae. It varies much in size, sometimes appearing only as a slight swelling of the trunk, that connects the upper and lower cervical ganglia. It lies on the longus colli, and behind the carotid and internal jugular vein. Three or four branches depart from it below, surround the vertebral and inferior thyroid arteries, and unite again at the lower cervical ganglion. It communicates with the neighbouring cervical nerves, and sends branches to the cardiac plexus, with the inferior thyroid artery to the gland of that name, and to the scalenus anticus. Its branches communicate with those of the recurrent.

The inferior cervical ganglion (*cardiacum*) exists constantly, but varies greatly in size and figure; sometimes it is even double. It generally lies in the hollow between the transverse process of the 7th cervical vertebra, and the neck of the first rib; or it may be placed in the hollow of the first rib. It may be either above or below, before or behind, the inferior thyroid artery, and it is partly covered by the vertebral. It extends to the first intercostal space, and sometimes seems confused with the first thoracic ganglion.

This ganglion has one or more superior branches; when it is single it joins the inferior branch of the upper ganglion; when they are more numerous, they surround the vertebral or thyroid artery, and join the middle ganglion. Another follows the vertebral artery through the foramina of the transverse processes, gives filaments to the inter-transversales muscles, and communicates with the cervical nerves.

Two branches come from the ganglion below; one goes behind, and the other in front of the subclavian artery, and they join the first thoracic ganglion.

The external branches communicate with the sixth, seventh, and eighth cervical, and the first dorsal nerves; others



## NERVOUS SYSTEM.

others are expanded on the coats of the subclavian artery, and some twigs are lost on the anterior scalenus.

The internal branches are few and small; they go to the longus colli, and to the pulmonary plexus, and one anastomoses with the recurrent nerve. The anterior branches are the inferior cardiac nerves, which unite into one, two, or three trunks.

*Nerves of the Heart.*—This organ receives its principal supply from the ganglia; but the par vagum and the recurrent communicate with the other cardiac branches.

On the right side there are three cardiac nerves, a superior, a middle, and an inferior. The superior, called by Scarpa the superficial, arises by five or six filaments from the superior cervical ganglion. These unite into a trunk, which descends perpendicularly to the lower part of the neck, along the vertebrae, on the inside of the trunk, which connects the two cervical ganglia. It goes behind the middle cardiac nerve, and divides into several branches, which communicate with the recurrent and the middle cervical ganglion. But sometimes it passes over the common carotid to the arch of the aorta, where it joins the middle cardiac nerve. In its passage along the neck, it communicates with the par vagum, and with the nervous arch formed by the descendens noni; and it sends branches to the œsophagus, and to the muscles covering the trachea.

The middle, called by Scarpa the great or deep-seated cardiac nerve, is the largest of the three. It arises from the middle cervical ganglion, passes forwards and downwards by the side of the carotid, and then over the subclavian; it runs along the arteria innominata, and passes between the arch of the aorta and the bronchi to terminate in the cardiac plexus. It communicates with the par vagum and the recurrent, and gives several slender twigs to the aorta.

The inferior, or small cardiac nerve of Scarpa, comes from the lowest cervical ganglion in the form of a plexus, descends behind the subclavian artery, and then by the side of the innominata, to the front of the arch of the aorta, and turns towards the left on that vessel. It receives several twigs in this course from the recurrent and par vagum, and gives many to the aorta.

On the left side there are usually only two cardiac nerves; the superior has the same origin, and nearly the same course as on the right. It descends between the carotid and subclavian arteries, and divides into several twigs, of which some go to the front of the aorta, and the others join the common cardiac plexus behind that vessel.

The great cardiac nerve is formed on the left side by the union of those which come from the two lower ganglia. It goes forwards and downwards to the back of the aorta, and there joins the cardiac plexus. This and the preceding have considerable communications with branches of the par vagum. The nerves of the heart, as they approach the plexus, sometimes form a ganglion (*ganglion nervorum cordis*), placed near the last cervical vertebra and the subclavian artery, and sometimes wanting.

The cardiac plexus, or the common point of termination of the nerves just described, occupies the posterior part of the arch of the aorta. It corresponds behind to the division of the bronchi, and to the anterior pulmonary plexus of the par vagum; and it extends from the origin of the innominata to the division of the pulmonary artery. The nerves of which it consists are remarkably soft. It receives above the right, middle, and inferior cardiac nerves, several branches from the left superior nerve, and sometimes from the right.

Its anterior branches are inconsiderable; they are distributed

to the front of the aorta; the posterior join the anterior pulmonary plexus. The inferior are the largest and most numerous, and belong properly to the heart. These are partly distributed on the large vessels, as the trunk and branches of the pulmonary artery, and the pulmonary veins, and partly compose an anterior and posterior coronary plexus, which attend and surround the anterior and posterior coronary arteries, and follow their ramifications into the substance of the heart. The posterior plexus is much the largest, and, consequently, the flat surface of the heart has more numerous nerves than the convex. The branches of these plexuses adhere closely to the arteries; and it is supposed by some anatomists, that the nerves are entirely distributed on those vessels, without going at all to the muscular substance of the heart.

*Thoracic Ganglia.*—The appearance of the system of the ganglia in the chest is very different from what it presents in the neck: in the latter its parts are so distinct, and so widely separated, that they must be described distinctly. In the chest, on the contrary, the ganglia are so small, and so near to each other, and the uniting branches so large, that the whole looks like a continuous nervous trunk. There are twelve thoracic ganglia, placed on the heads of the ribs, and covered by the pleura; sometimes the lower cervical ganglion extends to the first rib, and takes the place of the first thoracic. Their form is irregular; in most approaching to the triangular: their surfaces are flattened, and their size is inconsiderable, except the first, which is large.

The superior and inferior branches of these ganglia may be considered together; they unite them into one cord, and are remarkably large, when compared with the corresponding uniting branches in the neck. Two contiguous ganglia are always joined in the chest by a single branch. Careful dissection and examination will always enable us to distinguish the ganglia from the branches that unite them, although in many cases the difference of size is not considerable. The upper ganglion has two superior branches, which we have already described as the inferior of the last cervical ganglion; the inferior branch of the last thoracic ganglion joins the first lumbar ganglion.

The external branches vary from one to three or four for each ganglion; they go obliquely upwards and outwards, and communicate with the anterior branches of the respective dorsal nerves.

*Internal Branches.*—The superior thoracic ganglion sends branches to the cardiac plexus, to the vertebral and subclavian artery, to the anterior scalenus, and the longus colli.

There are a few small branches sent to the descending aorta, to the intercostal arteries, and to the plexus formed on the œsophagus by the par vagum. The most important nerves produced by the thoracic ganglia are the splanchnic, two in number, a great and a small one.

The great splanchnic nerve arises by four or five branches, at a considerable distance from each other, from the inner side of the middle thoracic ganglia, from the sixth or seventh, to the ninth or tenth. These pass obliquely forwards and inwards on the vertebral column, covered only by the pleura, and unite into one trunk about the eleventh dorsal vertebra. The trunk continues its course in the same direction, and enters the abdomen by a small slit in the appendix of the diaphragm, being divided, as it passes, into three or four branches, which separate a little from each other, and terminate behind the stomach on one side, and the liver on the other, in ganglia considerably larger than those hitherto described.

A smaller nerve, called splanchnicus minor, or accessorius, arises



## NERVOUS SYSTEM.

arises by two branches from the lower thoracic ganglia; these come forwards on the vertebræ, and join into one trunk, which passes through the same opening of the diaphragm with the former, and terminates partly in the celiac ganglia, partly in the renal plexus.

There is a large flattened ganglion, called semi-lunar, on each side of the abdomen, in which the splanchnic nerves end. This lies on the surface of the crus of the diaphragm, by the side of the celiac artery, and just below the phrenic. Many other ganglia (from twelve to twenty in number) smaller than this, varying greatly in size and figure, are placed near it. All these are united together, and to those of the opposite side, by numerous short and thick nervous branches, and thus compose an almost inextricable plexus surrounding the root of the celiac artery, and its primary branches, and the sides and front of the aorta. This has been called the solar plexus, and is named by Soemmerring *plexus celiacus*.

This plexus lies upon the vertebral column, the aorta, and the crura of the diaphragm; the liver, stomach, and pancreas are placed above, in front of, and below it. It has numerous large communications with the nerves of the eighth pair; and it receives branches from the last thoracic ganglion.

From this, secondary plexuses go off with the different arteries to the various organs, and their branches adhere closely to the coats of the vessels. These are formed, like the celiac plexus, of ganglia and nervous chords, and their communications compose quite a fine net-work.

1. The diaphragmatic plexus consists of a few twigs accompanying the arteries, distributed to the concavity of the diaphragm, and communicating with the phrenic nerves.

2. The coronary stomachic plexus surrounds the artery of the same name, turns with it along the lesser curvature of the stomach, and reaches the pylorus, its branches becoming gradually less and less numerous, as it approaches the latter part. This plexus is augmented on the stomach by the par vagum; it joins the hepatic plexus near the pylorus, and it sends branches with the right gastro-epiploic artery.

3. The hepatic is a very considerable plexus, surrounding the hepatic artery and vena portarum, and accompanying them to the great fissure on the under surface of the liver. A small plexus parts from this, to accompany the right gastro-epiploic artery, and to scatter branches also on the duodenum and pancreas. The ramifications of the hepatic plexus surround the neck of the gall-bladder, and are distributed in considerable number on that organ; many also surround the ductus choledochus. They enter the liver with the hepatic artery and duct, and vena portarum, and follow the ramifications of those vessels in its substance.

4. The splenic plexus is small in proportion to the size of its artery, and does not lie very close upon the vessel. There are two or three small ganglia at its commencement; but afterwards we see only a few branches not communicating very frequently. They enter the substance of the spleen with the arterial branches; give some twigs to the pancreas, and others that follow the left gastro-epiploic artery.

5. The superior mesenteric plexus is a prolongation of the great celiac plexus, in front of the aorta, where it quickly meets with the superior mesenteric artery. It is a very intricate intertexture of nervous branches with numerous ganglia, lying very close on the artery, which it accompanies between the pancreas and duodenum, and then between the two layers of the mesentery. Its branches accompany those of the artery, and are distributed with them to the small

intestine, to the cæcum, the ascending and the transverse portions of the colon.

6. The inferior mesenteric plexus (*mesocolicus*, or *mesentericus medius*) is made up of branches from the preceding, from the lumbar ganglia, from the renal and the spermatic plexuses. It becomes connected with the trunk of the inferior mesenteric artery, and accompanies it to the superior aperture of the pelvis; its branches surround the ramifications of that trunk, and terminate upon the arch, the descending portion, the sigmoid flexure of the colon, and the rectum, and contribute to the formation of the hypogastric plexus.

7. Renal plexuses (*plexus nervorum renum gangliiformis*, *dexter et sinister*.) These are made up by branches from the celiac and superior mesenteric plexuses, from the smaller splanchnic nerves, and from the tenth and eleventh thoracic ganglia; the latter are the posterior renal nerves of Walter. They receive filaments also from the abdominal portion of the sympathetic. According to that anatomist, there are four ganglia on the right, and seven on the left renal nerve; these communicate with each other, and those of the two sides are also joined together. Several nerves proceed from these ganglia, over the artery, nearly parallel to each other, and enter the organ with the arterial branches. Some twigs go to the renal capsule.

8. Spermatic plexuses. These are inconsiderable, and arise chiefly from the renal; two spermatic ganglia are found lower down on each side, communicating with each other, and with the superior and inferior mesenteric, and the hypogastric plexuses. From these sources a small plexus arises, surrounding the spermatic artery, adhering closely to it, and accompanying it to the testis and ovarium. It gives a branch to the ureter.

9. The hypogastric plexus (*mesentericus infimus*) is produced from the lumbar and spermatic ganglia, and the inferior mesenteric plexus, united with the numerous branches already described of the sacral nerves. It consists of numerous small twigs communicating frequently, but not mixed with ganglia, placed at the side and back part of the pelvis, and sending its branches to the rectum, ureter, bladder, vesiculæ feminales, vagina, and uterus. The lower part of the aorta, the internal iliac artery and its branches receive numerous twigs from it.

Such are the numerous plexuses which the abdominal viscera receive from the system of the ganglia. The splanchnic nerves are usually described as the origin of these; but when we observe that there is no proportion in size between the splanchnic nerves and the numerous large ganglia below the diaphragm, and that those ganglia produce nearly all the nerves of the solar plexus, we must regard the ganglia as the true centres of the abdominal nerves, and the splanchnic trunks only as branches of communication.

The abdominal or lumbar ganglia continue the chain from the chest to the junction of the last lumbar vertebra and sacrum, and are described by authors as the continuation of the great sympathetic nerve in the abdomen. They are generally five in number, but there may be only four, three, or even two. Their form and size are subject to great variety; they are usually flattened and angular; larger than the thoracic, and of the ordinary reddish-grey colour. They are more completely distinguished from each other than those in the chest. Their situation is on the anterior lateral part of the vertebral column; either on the bone, or the fibro-cartilage.

They are connected throughout by slender branches passing from one to the other; sometimes there is a single branch,



branch, sometimes two, or even three. The superior lumbar ganglion is joined to the last thoracic by a branch, which passes through a slit in the fibres of the crus of the diaphragm, rather below the opening which transmits the splanchnic nerves; the last lumbar is joined to the first sacral ganglion. According to Bichat, the connecting branch between the lumbar and thoracic ganglia is sometimes wanting.

Each ganglion produces two or three branches on the outside, which go obliquely upwards above, transversely in the middle, and downwards below; cross in front of the lumbar arteries, penetrate the attachments of the psoas, and join the anterior branches of the lumbar nerves. These are much longer than the corresponding communicating nerves in the chest, because the lumbar ganglia are placed so far forwards on the spine. Some very small twigs are distributed to the quadratus lumborum.

On the inside, the lumbar ganglia, or the branches which unite them, produce the following nerves: 1, twigs to the aorta and lumbar arteries; 2, a branch to the renal plexus, and another to the spermatic; 3, branches uniting together, and with those of the opposite side, to form accessory ganglia lying on the aorta, giving branches to that vessel, to the lumbar arteries, the inferior mesenteric and hypogastric plexuses; 4, small branches joining those of the opposite side.

The sacral ganglia continue the series in the lower part of the vertebral column, and form, with their uniting branches, the pelvic portion of the great sympathetic nerve, according to the common descriptions.

Their usual number, according to Walter, is five on each side; Bichat only mentions three as clearly recognisable. The upper is the largest, and the size decreases downwards; they are flattened, and irregular in figure; indeed they are subject to great variety in all respects. They are placed at the side of the anterior surface of the bone, and covered in front by the peritoneum and rectum.

The first is joined to the last lumbar nerve; they are connected together by one, two, or three branches. Bichat states that the connecting branch between the last lumbar and first sacral ganglion is sometimes wanting.

On the outside the sacral ganglia are connected by several branches to the sacral nerves; they send also some slender twigs to the pyriformis and levator ani. Branches of irregular number go from side to side to unite the right and left ganglia. Others are sent to the rectum, the hypogastric plexus, and the internal iliac artery: a branch descends to the upper and front part of the coccyx from the last sacral ganglion on each side; they unite on the surface of that bone, and a small swelling marks the point of union; this is called the ganglion coccygeum, but does not exist constantly. A few very small twigs go from it to the end of the rectum, and the surface of the bone.

Besides the works referred to in the article BRAIN, the reader may consult Soemmerring, de Corporis Humani Fabrica, tom. iv.; Haller, Elementa Physiologiae, tom. iv.; Bichat, Anatomie Generale, tom. i.; and the works of Gall and Spurzheim mentioned in this article. For an account of the ramifications of the nerves, besides the two books first mentioned, see Walter, Tabulae Nervorum Thoracis & Abdominis, folio; Scarpa, Tabulae Neurologicae, folio; Fischer, Descriptio Nervorum Lumbalium et Sacralium, folio; Ludwig, Collectio Scriptorum Neurologico-rum Minorum.

*NERVOUS System, Wounds of Nerves, in Surgery.* In almost every treatise upon surgery, we find a section upon the bad symptoms which originate from wounds of nerves. Now, al-

though it cannot be questioned, that the wound, or division, of a large nerve ought to be regarded as a serious accident, inasmuch as such an injury may even be followed by fatal consequences, and this nearly with certainty when nerves, supplying particular viscera, are interested, yet it should be understood that, in every accidental cut, numerous nervous filaments are either completely, or partially divided, without any alarming effects being usually produced, and we may therefore conclude, that wounds of ordinary nerves are not attended in common instances with any remarkable hazard. The complete division of the trunk of a large nerve of course produces paralysis in the parts to which the branches of that nerve tend; and a partial section of it sometimes appears to give rise to violent shooting pains in the same parts, attended with severe nervous irritation throughout the whole constitution. Gunshot injuries, in the track of large nerves, were observed by M. Larrey to be particularly often followed by tetanus in the climate of Egypt. Whether this observation applies to similar accidents in more northern countries, we cannot decide; but, in these, tetanus is well known to be far less frequent.

Mr. Pott, in his lectures, used to mention cases, in which patients had suffered distracting pain after venesection, followed by convulsions, and other symptoms, which could only be ascribed to nervous irritation, originating from the injury of the cutaneous nerves in the operation. Mr. Abernethy has treated this subject with much discrimination; he explains what nerves are exposed to injury; what are the effects likely to be produced by such an accident; and what means are most likely to afford relief.

The two cutaneous nerves are chiefly exposed to the lancet. Most frequently, all their branches pass beneath the veins at the bend of the arm; but sometimes many small filaments are detached from these branches and proceed over the vessels. When a nerve is irritated at any point between its origin and termination, a sensation is felt, as if some injury were done to the parts which it supplies. Hence, when the cutaneous nerves are injured, the integuments of the forearm will seem to suffer pain.

It seems highly probable, that some symptoms, consequent to venesection, have been, in certain instances, unfoundedly imputed to the irritation of a nerve arising from its partial division. As Mr. Abernethy has observed, it would be strange if a partial division of a nerve should not happen in the many operations which are daily performed, and the innumerable wounds which are continually occurring; yet no particular symptoms usually ensue.

The practice of completing the division of the nerve, supposed to be partially cut, may therefore seem a proceeding, for which the indication is extremely doubtful. The plan, however, has the recommendation of being attended with no particular risk; and, upon the whole, it may be as rational a thing as any which can be pursued, when the symptoms of irritation in the course of the injured nerve are strong and well marked. A transverse incision may be made above the orifice in the vein. This wound need not be extensive; for the injured nerve must lie within the limits of the original orifice, and there is no occasion for the cut to extend below the fascia, as all the filaments of the cutaneous nerves lie above this part. See Abernethy's Surgical Works, and Cooper's First Lines of the Practice of Surgery, edit. 3.

Some observations, connected with this subject, will be found in the article *Tic Douloureux*.

*NERVUS*, in *Botany*, the rib, or nerve of a leaf. See *COSTA* and *COSTATUM*.

*NES*, in *Geography*, a river of Denmark, in the island of



of Zealand, which runs into the Baltic; 4 miles S. of Nefwed.

NESA, a town of Persia, in Khorasan, on the borders of Kharasim, serving as a frontier between the two countries. In the year 1221 it was taken, by Jenghis Khan, after a siege of fifteen days. The Mongols took it by storm, and the next day the inhabitants were drawn out into a plain, and shot with darts and arrows like wild beasts; strangers, natives, and peasants without distinction, to the amount of 70,000; 200 miles N. of Herat.

NESBIT, THOMAS, in *Biography*, a Scotch antiquary, the son of the lord president Nesbit, was born at Edinburgh in 1672. He was author of an excellent book on Heraldry, and a Vindication of Scottish Antiquities, which is said to be still in MS. in the advocate's library at Edinburgh. He died in 1725.

NESBIT'S Harbour, in *Geography*, a harbour on the coast of New Britain, in North America, where, in 1752, the Moravians formed a settlement, but being either expelled or killed, a second attempt was made in 1762 under the protection of the British government, favoured by the Esquimaux, and succeeded.

NESCOPECK RIVER, a river of America, which falls into the Susquehannah river, near the mouth of a creek of that name, in Northumberland county, Pennsylvania, opposite to the town of Berwick; 160 miles N.W. of Philadelphia. N. lat.  $41^{\circ} 3'$ .—Also, an Indian town which formerly stood near the site of Berwick.—Also, a mountain of Pennsylvania, near the Susquehannah river.

NESH, a provincial term commonly applied to such animals of the horse or cow kind as are tender or *washy*.

NESIGODA, in *Geography*, a lake of Silesia, in the principality of Oels; 8 miles S. of Militfch.

NESIRBAD, a town of Persia, in Farfistan; 69 miles S.S.E. of Schiras.

NESLE, a town of France, in the department of the Somme, and chief place of a canton, in the district of Peronne; 10 miles S. of it. The place contains 1567, and the canton 8744 inhabitants, on a territory of  $117\frac{1}{2}$  kilometres, in 25 communes.

NESLOU, a small island in the Persian gulf; 180 miles W.S.W. of Ormuz.

NESMIEL, a town of Hungary; 8 miles S.E. of Comorn.

NESPA, a town of Mexico, in the province of Mechoacan, at the mouth of a river which runs into the Pacific ocean.

NESPEREIRA, a town of Spain, in Galicia; 12 miles N. of Tuy.

NESS, a town of Norway, in the diocese of Aggerhuus; 36 miles N.N.W. of Christiania.

NESS, *Loch*, a lake in the county of Inverness, Scotland, is a most beautiful expanse of water, twenty-two miles long, and from one to two miles and a half broad. Its depth, in the centre, is from sixty to one hundred and thirty fathoms, and even near its sides, excepting at the points of Torr and Foyers, the declivity is such, that a ship of the line might sail in safety within fifty yards of the shore, from end to end, on either side of the lake. Owing to this circumstance loch Ness never freezes, even in the severest season; a truth which is strongly doubted by Dr. Johnson, though admitting of as easy an explanation as any phenomenon connected with chemical science. Loch Ness abounds with trout, and a few salmon are also sometimes found to have passed the cruives in the river Ness when the water is high; which in rainy weather takes place to the extent of ten feet perpendicular. This lake is fre-

quently agitated with great violence by the winds; and on some occasions even without any apparent cause. An event of this sort occurred in a most extraordinary manner on the 1st of November 1755, the time of the great earthquake, which nearly destroyed Lisbon. The water rose with the utmost impetuosity from east to west, many of the waves being carried two hundred yards up the Oich, and breaking, on its banks, five feet above the level of the river. It continued in this state for nearly an hour, when the commotion ceased, by a wave much larger than any that preceded it, overflowing the north shore of the lake. Loch Ness communicates, by the river Ness, with the Moray frith, and forms part of the chain of lakes and rivers from that arm of the North sea, to the sound of Mull, on the western coast. As the lakes are all navigable, and rise very little above the level of the sea, a canal was lately projected on this line. It is denominated the Caledonian Canal, and is now nearly completed, under the scientific management of Mr. Telford; and as it is designed to admit frigates of 32 guns, there is reason to expect that the singular spectacle will soon be exhibited, of large vessels crossing the British island, from the Atlantic to the German ocean, surrounded by mountains which frequently tower to an enormous height. (See CANAL, *Caledonian*.) The scenery of this lake is grand and magnificent in the highest degree, as the hills are well covered with wood, and sometimes slope gradually from the shore, and at others rise with the utmost boldness and irregularity. The vale of Foyers, at its eastern extremity, is not inferior in romantic beauty to the celebrated Dove-dale of Derbyshire. The river from which it derives its name forms two most beautiful falls, one of them seventy, and the other two hundred and twelve feet in height. The latter is consequently among the loftiest in the world, and, during floods, presents a view, at once grand and impressive, Pennant's Tour in Scotland. Beauties of Scotland, vol. v.

NESSA, or NESSERLAND, an island in the N. part of Dollart bay, on the coast of East Friesland, a little to the S.E. of Emden. N. lat.  $53^{\circ} 18'$ . E. long.  $6^{\circ} 59'$ .

NESSELWANG, a town of Bavaria, in the bishopric of Augsburg; 45 miles S. of Augsburg.

NESSO, NEXUS. See USUS.

NEST. See NIDUS.

NESTES, in *Geography*, a small country of France, so called before the revolution, but now a part of the department of the Higher Pyrenées: its chief town was La Barthe.

NESTIER, a town of France, in the department of the Higher Pyrenées, and chief place of a canton, in the district of Bagnères; 4 miles E. of La Barthe. The place contains 503, and the canton 8176 inhabitants, on a territory of 170 kilometres, in 16 communes.

NESTLINGS, a name given to Canary birds brought up by hand. See CANARY-BIRD.

NESTON, GREAT, in *Geography*, a small market-town in the hundred of Wirall and county palatine of Chester, England, is situated close upon the shore, on the south-western side of a peninsula formed by the estuaries of the Dee and Mersey. It is a place of very little importance, and chiefly supported by the number of persons who resort to it as a summer residence. The market day is Friday. The manor here was at an early period in the possession of the family of Montalt, and was bequeathed by Robert de Montalt to queen Isabel in the reign of Edward III. This prince afterwards granted it to William Montacute, earl of Salisbury, but reverting to the crown soon after, by attainder, it was given by Henry IV. to sir John Stanley, ancestor to the earls of Derby, by one of whom it was sold



to the Whitmores of Leighton, and from them passed, by female heirs, to the Savages and Mostyns. The parish is of great extent, and contains the townships of Lidsham, Leighton, Little Neston, Nefs, Raby, Thornton, Mayow, and Willaston, the whole comprising 625 houses, and 1909 inhabitants, as appears from the parliamentary returns of 1811. Lysons's *Magna Britannia*, vol. ii. 4to. 1810.

NESTOR, in *Biography*, a distinguished Grecian chief in the time of the Trojan war, was king of Pylos in the Peloponnesus. He was one of the twelve sons of Neleus, of whom all but himself were slain in the invasion of the country by Hercules. Nestor was preserved from slaughter by his tender age, and by being educated among the Gerenians. He was very successful in battle, while young, against the Eleans. He was placed by Hercules on the throne of Pylos, and, as king of that country, and of Messenia, he led his subjects to the Trojan war, where he distinguished himself among the rest of the Grecian chiefs, by eloquence, address, wisdom, justice, and an uncommon prudence in the administration of affairs. His character is represented by Homer as the most perfect of all his heroes, and Agamemnon is made to exclaim, that if he had ten such generals as Nestor he should soon see the walls of Troy reduced to utter ruin. He is represented, by the poets, as of a great age at the siege of Troy, and even as having lived three ages, which has been thought to be about ninety years. His wisdom, the result of long experience, is displayed on several occasions in the councils of the Greeks, and his honey-like eloquence is employed in conciliating the dissensions between the leaders. The garrulity of old age, joined to the qualities of a veteran statesman and warrior, renders him a very natural and interesting personage in the *Iliad*. After the Trojan war Nestor is supposed to have retired to Greece, where he enjoyed in the bosom of his family the peace and tranquillity which were due to his wisdom and his old age. The manner and time of his death are unknown: the ancients are all agreed that he lived three generations of men, and from this circumstance it was usual among the Greeks and the Latins, when they wished a long and happy life to their friends, to wish that they might see the years of Nestor. He had two daughters and seven sons, among the latter was Antilochus, a brave warrior, who perished before the walls of Troy. Homer.

NESTOR, or LETOPIS NESTOROVA, a Russian historian, born in the year 1056 at Bielozero, assumed the monastic habit in the 19th year of his age, and took the name by which he is known. When he entered the monastery he cultivated the Greek language with diligence, though he is thought to have studied it rather in the Byzantine historians, than in the older classics. He is supposed to have died in 1115; the work by which he is chiefly known is a "Chronicle," containing, after a short introductory account of the early state of the world, taken from the Byzantine writers, a geographical description of Russia, and the adjoining countries; an account of the Slavonian nations, their emigrations, dispersion, and final settlement, and lastly, a chronological series of the Russian annals from 858 to about 1113. This work lay in obscurity, till Peter the Great ordered a transcript to be made of a copy of it, found in the library of Konigsberg. Professor Muller, in 1732, published a German translation of the first part, which has been erroneously ascribed to one Theodosius. It was published at Petersburg in the year 1767, and is valued as the earliest monument of Russian history. The style of this work is simple and unadorned, such as suits a mere recorder of facts, but his chronological exactness contributes to ascertain the era and authenticity of the

events which he relates. We may add further, on the authority of Mr. Coxe, that Nestor was followed successively by three annalists, the first was Sylvester, abbot of the convent of St. Michael, at Kiof, and bishop of Perilass, who died in 1123; he commences his chronicle from 1115, two years posterior to that of Nestor, and continues it to the year 1123, from which period a monk, whose name has not come down to us, carries the history to 1157, and another, equally unknown, to 1204. With respect to these performances, M. Muller informs us, that the labours of Nestor and his three continuators have produced a connected series of the Russian history so complete, that no nation can boast of a similar treasure for so long and unbroken a period. See Coxe's *Travels*, vol. iii.

NESTOR, an excellent Roman musician, famous pantomimic, and a great favourite of Caligula. When he was on the stage, if any one interrupted him he was instantly scourged, even by the emperor himself.

NESTORIANS, in *Ecclesiastical History*, a sect of ancient Christians, still said to be subsisting in some part of the Levant; whose distinguishing tenet is, that Mary is not the mother of God. They take their name from Nestorius, a Syrian, who, of a monk, became a priest, and a celebrated preacher; and was at length, after the death of Sisinnius in 428, raised by Theodosius to the see of Constantinople.

At first he shewed a great deal of zeal against heresy, in his sermons before the emperor; but at length, taking the liberty to say, that he found in Scripture that Mary was the mother of Jesus, but that he no where found that Mary was the mother of God; his auditory was shocked, and a great part of them retired from his communion.

His writings were soon spread through Syria, Egypt, and Persia, where he made many converts, notwithstanding the vigorous opposition of St. Cyril.

But nothing tended so much to propagate with rapidity the doctrine of Nestorius, as its being received in the famous school which had for a long time flourished at Edeffa. For the doctors of this celebrated academy not only instructed the youth in the Nestorian tenets, but translated from the Greek into the Syriac language the books of Nestorius, of his master Theodorus of Mopsuestia, and the writings also of Diodorus of Tarsus, and spread them abroad throughout Assyria and Persia.

One of the chief promoters of the Nestorian cause was Barsumas, created bishop of Nisibis A.D. 435. Such were his zeal and success, that the Nestorians, who still remain in Chaldaea, Persia, Assyria, and the adjacent countries, consider him alone as their parent and founder. By him, Perozes, the Persian monarch, was persuaded to expel those Christians who adopted the opinions of the Greeks, and to admit the Nestorians in their place, putting them in possession of the principal seat of ecclesiastical authority in Persia, the see of Seleucia, which the patriarch of the Nestorians has always filled even down to our time. Barsumas also erected a school at Nisibis, from which proceeded those Nestorian doctors, who, in the fifth and sixth centuries, spread abroad their tenets through Egypt, Syria, Arabia, India, Tartary, and China.

His capital tenet was, that there are two persons in Jesus Christ; and that the Virgin was not his mother, as God, but only as man.

This doctrine was condemned in the council of Ephesus summoned by Theodosius the Younger, A.D. 431, at which above two hundred bishops assisted, and Cyril presided; and Nestorius was anathematized, without being heard, and deposed from his see.

Nestorius



Nestorius was not the author of this opinion, but borrowed it at Antioch, where he had studied; and though he was the suffering and persecuted party, from the beginning of the controversy to his death, the flame was first kindled by the presbyter Anastasius. Theodorus Mopsuestanus, whose disciple he was, had taught the same before him.

The abettors of this doctrine refuse the title Nestorians; alleging, that it had been handed down from the earliest times of the Christian church.

In the tenth century the Nestorians in Chaldæa, whence they are sometimes called Chaldæans, extended their spiritual conquest beyond mount Imaus, and introduced the Christian religion into Tartary, properly so called, and especially into that country called Karit, and bordering on the northern part of China. The prince of that country, whom the Nestorians converted to the Christian faith, assumed, according to the vulgar tradition, the name of John, after his baptism, to which he added the surname of Presbyter, from a principle of modesty; whence it is said, his successors were each of them called Prester John, until the time of Jenghis Khan. But Mosheim observes, that the famous Prester John did not begin to reign in that part of Asia before the conclusion of the eleventh century. The Nestorians formed so considerable a body of Christians, that the missionaries of Rome were industrious in their endeavours to reduce them under the papal yoke. Innocent IV. in 1246, and Nicolas IV. in 1278, used their utmost efforts for this purpose, but without success. Till the time of pope Julius III. the Nestorians acknowledged but one patriarch who resided first at Bagdat, and afterwards at Mouful; but a division arising among them, in 1551, the patriarchate became divided, at least for a time, and a new patriarch was consecrated by that pope, whose successors fixed their residence in the city of Ormus, in the mountainous part of Persia, where they still continue distinguished by the name of Simeon; and so far down as the 17th century, these patriarchs persevered in their communion with the church of Rome, but seem at present to have withdrawn themselves from it. The great Nestorian pontiffs, who form the opposite party, and look with a hostile eye on this little patriarch, have, since the year 1559, been distinguished by the general denomination of Elias, and reside constantly in the city of Mouful. Their spiritual dominion is very extensive, takes in a great part of Asia, and comprehends also within its circuit the Arabian Nestorians, and also the Christians of St. Thomas, who dwell along the coast of Malabar. It is observed, to the lasting honour of the Nestorians, that of all the Christian societies established in the East, they have been the most careful and successful in avoiding a multitude of superstitious opinions and practices that have infected the Greek and Latin churches. About the middle of the 17th century the Romish missionaries gained over to their communion a small number of Nestorians, whom they formed into a congregation or church, the patriarchs or bishops of which reside in the city of Amida, or Diarbekir, and all assume the denomination of Joseph. Nevertheless, the Nestorians in general persevere, to our own times, in their refusal to enter into the communion of the Romish church, notwithstanding the earnest entreaties and alluring offers that have been made by the pope's legate to conquer their inflexible constancy. Mosheim.

NESTOSA, LA, in *Geography*, a town of Spain, in the province of Biscay; 21 miles W.S.W. of Bilbao.

NESTVED, a town of Denmark, in the island of Zealand, on the river Nes, near the coast. The river divides the town into two parts, called *Great* and *Little* Nestved, and by means of its discharge into the Baltic, furnishes the

trade of the town. It has two parish churches; 22 miles E.S.E. of Corfoer. N. lat.  $55^{\circ} 15'$ . E. long.  $11^{\circ} 51'$ .

NESTY, a town of Nepaul; 18 miles N.N.E. of Norgarcot.

NESUAR, a town of Hindoostan, in Allahabad; nine miles W. of Gazypour.

NET, in *Fishing* and *Fowling*, a contrivance by which to catch fish or fowl. See *FISHING*.

The taking of fowls by nets is the readiest and most advantageous of all others, where numbers are to be taken.

The making of the nets is very easy, and what every true sportsman ought to be able to do for himself. All the tools necessary to it are wooden needles, of which there should be several of different sizes, some round, and others flat; a pair of round-pointed flat scissars, and a wheel to wind off the thread. The packthread is to be of different strength and thickness, according to the sort of birds that are to be taken; and the general size of the meshes, if not for very small birds, is two inches from point to point.

The nets should be made neither too deep nor too long, for they are then difficult to manage: and they must be verged on each side with twisted thread. The natural colour of the thread is too bright and pale, and is therefore to be altered in many cases, according to the occasion.

The most useful colour is the russet: this is to be obtained by plunging the net, after it is made, into a tanner's pit, and letting it lie there till it be sufficiently tinged; this is of a double service to the net, preserving the thread very greatly, as well as altering the colour. The green colour is given by chopping some green wheat, and boiling it in water, then soaking the net in this green tincture till it have sufficient colour. The yellow colour is given in the same manner, with the decoction of celandine: this gives a pale and faint straw-colour, which is the colour of stubble in harvest time, and is just what is wanted. The brown nets are intended to be used on ploughed fields; the green on grass grounds, and the yellow on stubble lands.

Great care is necessary in the preserving of nets; and the principal thing to be considered in regard to this is, that all wet rots the threads; whenever they have been used in dew or rain, they must be hung up to dry in the sun; and if there is any rent or breach made, it must be mended as soon as it is discovered. In the drying, they must be hung as far as may be from the walls, that they may be out of the way of mice and rats, which are very apt to destroy them. The utmost depth that should be allowed to a net for fowl, is two fathom, and the utmost length six fathom.

The places for using fowling nets to most advantage, are the morning and evening haunts, where the birds come to feed. The sportsman is to be at the place at least two hours before the time of their coming, and the nets must immediately be spread flat and even upon the ground, and the two ends fastened down with stakes. At the lower part there is to be a long cord fixed to the upper edge of the net, by means of which it may be immediately raised, and pulled over. The sportsman is to hide himself behind some natural or artificial shelter, at the extremity of this line, and some cut grass must be strewed all over the net, as it lies on the ground, to hide it from the fowl; and some live bird, that has been taken before, should be staked down before the net, by way of a stall, to draw in the others.

As soon as a sufficient number of birds are within the compass of the net, it is to be pulled swiftly over them, and the fowler having taken those that are under it, may stake



stake down two or three more live ones, and spread the net, covering it with grafs as before. This sort of sport may be continued from as soon as it is light in the morning till an hour after sun-rise; but after that time, the birds have done feeding ravenously, and the sport is over for that day.

**NET, Cinque-port, in Fishery,** a name given to a sort of square net, resembling a cage, and having five entrances into it, from whence it has the name.

It is a very serviceable net in any pond or river, and is equally good in swift or standing water. In order to make this net, there must be provided four large and straight poles, answerable in length to the depth of the water. The ends of these must be sharpened in the manner of stakes, and there must be notches within a foot of the sharp part to fasten the net to; and at a convenient distance, on the poles, there must be another set of notches, for the fastening the other ends of the net.

The bottom of this net is four-square, without any entrance. A boat must be taken out with this net, to place it properly. The four poles must be fixed in the bottom in such a manner, that each may answer to the other in a direct line; and they must stand at such distances, that the net may be drawn out as stiff as possible between them. If the net is to be fixed in standing water, this method alone will do very well; but if it be a smooth stream, something more is necessary, otherwise the motion of the water will keep the net playing about, and this will frighten away the fish. To prevent this, four strong sticks are in this case to be fastened along the tops of the others, so as to make a sort of frame, to straighten and strengthen the others, and keep all tight.

When the net is perfectly fixed, it represents a cage, and the sides, top, and bottom are kept so firm, that the fish do not regard them; but seem to take them for weeds; and going in at the entrances, there is no returning, and in rich places great numbers are taken.

**NET, Clap.** See **CLAP-NET**, and **DORING**.

**NET, Crow, in Birding,** a name given to a sort of net contrived for the catching of wild fowl in the winter season. This net may be used in the day-time, and is to be made of double thread, or of fine packthread, and the meshes are to be two inches wide. The length of the whole should be about ten yards, and the depth about three; it should be verged on the sides with a strong cord, and stretched out in length very stiff upon long poles prepared for that purpose. When this net is brought to the place where it is to be used, it must be opened, and spread at full length and breadth; then its lower end is to be fastened all along the whole length of the ground, so that it only can be moved up and down; the upper end of the net must stand extended on the long cord, the farther end of it being first staked to the earth by a strong cord, above five yards distant from the net, and standing in an even line with the bottom of the net; the other end of the cord must reach at least five and twenty yards, to some natural or artificial shelter, by means of which the sportsman is to lie concealed from his prey. The net must be placed in such exact order, that it will play upon the least jerk of the cord, and that must always be given suddenly, lest the prey escape. This net is principally used for crows and pigeons, on new-sown corn-fields, and it may also be used in stubble-fields, where the stubble will hide the net from the fowl. If the meshes are made smaller, it may be used at barn-doors and the like for small birds, and a bait of chaff will bring them together under it. But the great use of the crow-net, is to spread it in mornings and evenings where the haunts of wild fowl are, which in hard weather

fly in great flocks to and from land, with and against the wind, and then fly close to the ground, in open countries and low lands, where there are few hedges. When a whole covey of these are within the reach of the net, it is to be let go over them, and they will be taken in great numbers at one cast.

**NET, Fold.** See **FOLD**.

**NET, Tramel.** See **TRAMEL**.

**NET, Tunnel.** See **TUNNEL**.

**NET, Water-fowl.** See **WATER-FOWL**.

**NET, Wolf.** See **WOLF**.

**NET, Neat, in Commerce,** something pure, and unadulterated with any foreign mixture.

Thus, wine is said to be net, when not falsified or sophistigated; and coffee, rice, pepper, &c. are net, when the filth and impurities are separated from them.

A diamond is said to be net, when it has no stains or flaws; a crystal, when transparent throughout.

**NET** is also used for what remains after the tare has been taken out of the weight of any merchandize; *i. e.* when it is weighed clear of all package.

Thus we say, a barrel of cochineal weighs 450 pounds; the tare is 50 pounds, and there remains net 400 pounds.

**NET-Measure, in Buildings,** is when no allowance is made for finishing; and in artificers' work, when no allowance is made for waste of materials.

**NET-Produre,** a term used to express what any commodity has yielded, all tare and charges deducted.

The merchants sometimes use the Italian words *netto proceduto*, for net produce.

**NET-Masonry.** See **MASONRY**.

**NETE**, in the *Ancient Greek Music*, the fourth string, or highest note of each tetrachord. When the third tetrachord was conjoined with the second, it was the *synnemenon*, and its nete was called *nete synnemenon*. The third tetrachord was called *diezeugmenon*, when it was disjunct or separated from the second by the interval of a tone, and its nete was then called *nete diezeugmenon*. And lastly, the fourth tetrachord, called *hyperbolæon*, its nete was always called *nete hyperbolæon*. With respect to the two first tetrachords being both always conjunct, they had no nete; the fourth string of the first being also the first of the second, it was called *hypatæ meson*, and the fourth string of the second, constituting the middle of the system, was called *mesæ*.

**NETHAN**, in *Geography*, a river of Scotland, which rises near Lesmahagow, in Lanerksire, and runs into the Clyde, about 5 miles below Lanerk.

**NETHE**, river of France, which runs into the Dyle, 6 miles N.W. of Malines.—A small river of the same name, with the epithet *Lesser*, unites with the other at Liere.

**NETHER STOWEY.** See **STOWEY Nether**.

**NETHER Vert.** See **VERT**.

**NETHERBY**, in *Geography*, a village of Cumberland, in England, abounding in antiquities, and supposed to have been a Roman station; 12 miles N. of Carlisle.

**NETHERLANDS**, or **SEVENTEEN PROVINCES**, a country of Europe, bounded on the N. by the German sea, on the E. by East Friesland, the bishopric of Munster, county of Bentheim, duchy of Cleves, archbishopric of Cologne, and duchy of Juliers, on the S. by the bishopric of Liege and by France, and on the W. by the German sea and part of France. It extended from N. lat. 40° 25' to 53° 30', and from E. long. 2° 30' to 7° 20'. The Netherlands, in general, were anciently known by the name of *Belgica Gallia*, which see; by the Spaniards they were called *Pays-bas*, and by the French *Pays-bas*, by the Germans *Niederlande*, and by the English *Netherlands*, or *Low Countries*,



## NETHERLANDS.

Countries, in reference to its situation with regard to High Germany. In the time of the Romans, who gained possession of this country with great difficulty, the inhabitants were Pagans, the original population consisting of Celts, who were supplanted by the Belgæ; and it is not certain when Christianity was first introduced into this country: towards the end of the third century, the ecclesiastics sent hither by pope Marcellin made many converts, but during the latter end of the fifth century a bishopric was erected at Tournay, and as Christianity began to flourish, churches were built at Cambray, Arras, Terouane, Maeltricht, and other towns. In the year 608 St. Amand preached at Ghent, and in the latter end of the seventh century St. Wildebrord, with his companions, preached the gospel in Holland, Zealand, and Utrecht. In the beginning of this century the Vandals committed great enormities in the Netherlands; and in the year 451, Attila, king of the Huns, invaded the country with an army of 600,000 men, and burnt most of its towns. In 445, Clodio, king of France, made himself master of Cambray and Tournay, and subdued the country as far as the Meuse. After the irruption of the Franks, this country formed Neustria, or the new kingdom, (the ancient kingdom of the Franks being on the E. of the Rhine,) partly belonging to the province of Flandria, and partly to that of Lotharingia, or Lower Lorrain. Soon after this period it was divided into provinces, forming as many different states, and the number of provinces has been generally reckoned seventeen, *viz.* the duchies of Brabant, Limburg, Luxembourg, and Gueldres; the marquisate of the empire of Antwerp; the comtés of Flanders, Artois, Hainault, Namur, Zutphen, Holland, and Zealand; and lordships of Malines, Utrecht, Overissel, Friesland, and Groningen; to which is added Cambresin; so that, in fact, there would be eighteen; but Guelderland and Zutphen being politically united to the Dutch states, they were called seventeen; and the United States were always called the Seven, although, according to the above statement, they are, in reality, eight. In the middle of the ninth century arose the powerful house of the earls of Flanders; and the counts of Hainault commence about the same epoch. The dukes of Lower Lorrain and Brabant are little known till the end of the 10th century. These, together with other large inheritances, gradually fell under the power of the dukes of Burgundy, who, in the 15th century, enjoyed dominions worthy of the regal title. During these two last epochs, the Netherlands became the great mart of commerce in the west of Europe, and were distinguished by opulence and the arts. With the heiress of Burgundy, the Netherlands passed by marriage to the house of Austria. When the seventeen provinces were united into one body under Charles V., he ordered their union to be perpetual; and for this purpose he published, in November 1549, with the consent, and at the request of all the states of the provinces, an irrevocable edict or law, providing for the regular succession of the reigning prince. Philip of Austria and his son Charles, being natives of the Netherlands, treated the people with affection, and allowed to the states a kind of share in the supreme authority with themselves. But Philip II., son of Charles V., was born in Spain, and had neither the affection for the Netherlands, nor the generous sentiments which actuated his father's conduct; and therefore, instead of pursuing the same mild and moderate measures, he had recourse to violent and cruel proceedings, of which the result was a general insurrection. In order to restrain its progress, and the spreading of the reformation, Philip introduced into the country a kind of inquisition, which aggravated the evil, and terminated in a

civil war. On this occasion the prince of Orange, retiring into Holland, was enabled, by the assistance of England and France, to preserve Holland and some of the adjacent provinces, which entered into a treaty for their mutual defence at Utrecht, in 1579; and these were afterwards styled the United Provinces; they were seven in number, *viz.* Holland, Zealand, Friesland, Groningen, Overissel, Guelderland, united with Zutphen and Utrecht. The ten Catholic provinces were, Flanders, Brabant, Artois, Hainault, Namur, Luxembourg, Limburg, Upper Guelderland, the marquisate of Antwerp, and the county of Malines or Mechlin. Several of these were retained by the Spaniards, until the duke of Marlborough gained the victory of Ramillies; after which Brussels the capital, and the greatest part of these provinces, acknowledged Charles VI., afterwards emperor, as their sovereign; but after his death they were wholly conquered by the French, except part of the province of Luxembourg, and afterwards restored by the peace of Aix-la-Chapelle in 1748; except a few that were retained by the French. Before the revolution in France, the greater part of the fore-mentioned Catholic provinces belonged to the house of Austria; the Dutch, however, occupied some districts of Flanders, Brabant, Upper Guelderland, and Limburg; the French possessed Artois, with certain portions of Hainault, Namur, Luxembourg, and Flanders; and Upper Guelderland belonged to the king of Prussia, the emperor, and the Dutch. In consequence of the revolution, Flanders, Austrian Brabant, Hainault, Upper Guelderland, Limburg, Luxembourg, the bishopric of Liege, Antwerp, the circle of the Lower Rhine, the duchy of Juliers, and the territory extending along the left bank of the Rhine, to the influx of the Meuse, were annexed to the French dominions by the treaty of Formio, A. D. 1797. The length of the Austrian Netherlands, computed from the eastern limit of Luxembourg to Ostend on the ocean, is about 180 British miles; and about 120 in breadth, from the northern boundary of Austrian Brabant to the most southern limit of Hainault. The extent is computed at 7520 square miles, with a population of 1,900,000. But if the French territory be extended to the Rhine, and thus to include large portions of the German circles of the Lower Rhine and Westphalia, the territory and population may be increased by at least one-third.

The established religion in the Netherlands is the Roman Catholic; but Protestants and other sects are tolerated. According to the new ecclesiastical division of the conquered provinces, the metropolitan see is the archbishopric of Mechlin; and the bishoprics are those of Namur, Tournay, Aix-la-Chapelle, Treves, Gand or Ghent, Liege, and Mentz, all the bishops being appointed by the French emperor. Before the late revolution, the inhabitants were notorious for their bigotry. These provinces boast of early literature soon after their conversion to Christianity in the seventh century; but in modern times they have rarely produced any writers of distinguished talents. The Flemish language, which partakes of the German and of the Dutch, remains uncultivated; and the chief authors have used the Latin or the French. Among their writers of any celebrity we may mention Froissart, Philip de Comines, and Lipsius. In general the Southern Netherlands are more eminent for artists, and the United Provinces for literary characters. For an account of the engravers of the Flemish school, see LOW COUNTRY.

The most celebrated universities were those of Tournay or Dornick, which have been long subject to the French, those of Douay and St. Omers, much frequented by English Catholics, and that of Louvain, of still greater celebrity, founded



founded in 1425. The manners and customs of the Netherlands partake of those of their neighbours, the Dutch and French, the phlegm of one being tempered by the vivacity of the other. The lower classes have been fond of religious pageantry, and much addicted to the superstitious observances of the Catholic system. The three chief cities of what were called the Austrian Netherlands are, Brussels, Ghent, and Antwerp. The other principal towns are, Mans, Bruges, Namur, Luxemburg, Roermond, and Limburg. The sea-coast of *Flanders* (which see), the maritime province, consists chiefly of sandy hills and downs, and has few inlets, most of the rivers flowing into the Scheldt. The two ports that deserve particular notice are, the *Sluys* and *Ostend*; which see. The Netherlands exceed every country in Europe, if we except the United Provinces, not only in the number, but in the great extent of its cities, towns, and villages. The chief edifices are cathedrals, churches, and monasteries. The canals of this country are very numerous, and some of them ancient. They intersect the provinces in all directions, such are those of Brussels, Ghent, Antwerp, Ostend, &c.; but of late years they have been much neglected. The manufactures and commerce of the Netherlands, which were formerly superior to any in the west of Europe, have much declined, partly because other powers entered into competition, and partly because freedom was established in the United Provinces, so that Amsterdam arose upon the ruins of Antwerp. The little commerce that is left is chiefly inland to Germany. The East India company of Ostend was suppressed by the jealousy of England and other powers; and the chief commerce was afterwards carried on by the English established in that city. Some few fragments of the manufactures still remain. Cambrai is renowned for its cambrics, and Tournay or Dornick was anciently famous for the finest lincens. At Bruges there are still some manufactures of broad sayes, baize, and other woollens; considerable fabrics of broad cloth, druggets, shalloons, and stockings, were conducted at St. Omers, chiefly with wool smuggled from England. The principal manufactures of tapeltry, fine linen, and laces; are at Mechlin, Brussels, Ghent, Antwerp, and Louvain; and these still enrich the country, and induce the farmers to cultivate flax, even on the poorest soils. For home consumption, the Netherlands produce abundance of corn and vegetables, and the coal mines, if they were properly conducted, would be important. Turf for fuel is plentiful, as are also iron, porcelain, clay, and various other commodities. The climate resembles that of the south of England, and is more moist than warm; nevertheless Luxemburg produces some wine, resembling Rhenish in austerity, but destitute of its spirit. The face of the country is generally level; the soil is a rich sandy loam, interspersed occasionally with fields of clay, but more frequently with large intervals of sand. The Netherlands, by the prevalence and boasted excellence of its agriculture, have been long deemed the garden of Europe. The repeated crops of excellent clover, cole, turnips, and clean crops of flax, barley, and oats have attracted the attention of accurate observers; and, indeed, the agriculture of this country has been celebrated for 600 years, ever since their commerce and manufactures became eminent; and it is remarked, that they still possess the essentials of good husbandry in the destruction of weeds, and perpetual crops. Hops, a native and peculiar product, adopted in England in the reign of Henry VIII., are abundant. The Netherlands never allow the land to lie fallow.

The chief river of the Netherlands is the Scheldt, which receives two other streams, the Lys and the Scalpe. The Dyle joins the Scheldt above Neil, after receiving from the

E. the Dermer, the Nette, or Nethe, from the N., and the Senne from the S. The Netherlands, although they have no elevations that deserve the name of mountains, have several woods and forests of considerable extent. The plants that are natives of this country may be found in the sandy and marshy districts of the S.E. coast of England, except the *Gentiana cruciata*. The breed of horses and cattle in this country is esteemed for its size. In various provinces are minerals of different kinds, slate, marble, and alabaster.

Since the union of the Austrian Netherlands with France, which has extinguished this appellation, or exchanged it for that of the Re-united Country, they have been divided into departments, subjected to the government established in that kingdom. Its condition seems to have been little, if at all, amended by exchanging the oppression of the nobles and clergy under its ancient regime for that of French despotism.

**NETHES**, *Two*, deriving its appellation from the rivers above-mentioned, one of the thirteen departments of the region of France, called the Re-united Country, formed of the north part of Brabant, 19 French leagues in length, and 13 in breadth, containing 2645 kilometres, or 143 square leagues, 249,376 inhabitants, on the right hand of the Scheldt, in N. lat.  $51^{\circ} 15'$ . It is divided into 3 districts or circles, 21 cantons, and 141 communes. According to Hassenfratz, it comprehends 1 circle, 23 cantons, and 153,981 inhabitants. The three circles are Antvers or Antwerp, including 114,507, Turnhout 62,172, and Malines 72,697 inhabitants. Its contributions in the 11th year of the new French era, were 2,667,815 fr., and its expences 268,236 fr. 33 cents. Its capital is Antwerp. The soil is sandy, and indifferently fertile.

**NETHINIMS**, among the *Jews*, the posterity of the Gibeonites, who were condemned by Joshua to be hewers of wood and drawers of water for the house of God.

The Nethinims are mentioned 1 Chr. ix. 2. Ezr. ii. 58. Neh. vii. 60. and Ezr. viii. 20. Ezra, in this latter passage, informs us, that they were given by David to the Levites, which is the original of their name; as the Levites were given by God to help the priests; and, therefore, in all places they are mentioned with holy persons. Some have called these persons inferior clergy; but they seem rather to have been servants to them. However mean their original, or low and laborious their employment may have been, the people of Israel were indebted to them for their zeal for the house of God. Many of them readily returned from Babylon to Judea, and performed their part for upholding the worship of God at his temple.

**NETHY**, in *Geography*, a river of Scotland, which rises in Invernesshire, and runs into the Spey, 3 miles S.E. of Grantown.

**NETIERS**, a town of Bohemia, in the circle of Schlan; 11 miles N.E. of Schlan.

**NETO**, a river of Naples, which runs into the sea, 7 miles N.N.W. of Cortona.

**NETOIDES**, acute sounds in the Greek music. See **LEPSIS**.

**NETOPION**, *Νετοπιον*, a name given by the ancients to a very fragrant and costly ointment, consisting of a great number of the finest spicy ingredients. Hippocrates, in his Treatise of the Diseases of Women, frequently prescribes the netopion in diseases of the uterus; and in other places he speaks of its being poured into the ear as a remedy for deafness; these compositions, by their attenuating qualities, dividing the viscid and thick humours.

The word netopion is also sometimes used to express the *unguentum*



*unguentum Ægyptiacum*, and sometimes simply for oil of almonds.

NETSBUCKTOKE, or *Sandwich Bay*, in *Geography*, a bay on the east coast of Labrador. N. lat.  $53^{\circ} 45'$ . W. long.  $57^{\circ} 30'$ .

NETSCHETIN, a town of Bohemia, in the circle of Pilsen; 9 miles S.E. of Teufing.

NETSCHER, GASPARD, in *Biography*, one of the most able artists of the Flemish school, was born at Heidelberg. His family afterwards migrating to Arnheim, he was there adopted by a physician, named Tullekens, who placed him first with one Kostec, a painter of dead game; and then with a better master, Gherard Terburgh, who was well qualified to lead the promising talents of Netscher into action.

The subjects he chose, when those talents were matured, were generally of that class called conversation pieces, with figures selected from among the better ranks of his countrymen. These, while he touched and finished them with great neatness, he treated with a breadth unknown till then among the Flemish painters. He finished all the parts of his pictures with great perfection, and the most characteristic imitation of nature. The rich silk and satin dresses of his figures, the gold and silver utensils, carpets, &c. &c. which he introduced in his compositions, are exquisitely wrought, and with uncommon brilliancy and lustre. He painted many portraits of a small size, but they exhibit much of the restraint which belongs to portrait painting, and which always prevents the most powerful exertion of an artist's talents; at least, the best effect which those talents are capable of producing.

King Charles II. invited him to London, but was not able to prevail upon him to quit his native country, and the satisfactory enjoyment of labouring in it both honourably and profitably.

Although he died at the early age of 45, yet his pictures are not very scarce, but are to be found in most collections of consequence in this country, and throughout Europe.

His principal residence was at the Hague.

NETSCHER, THEODORE, was the son of Gaspard, who taught him the art of painting from his earliest years, so that at the age of nine he was accounted a very extraordinary performer; and when he had attained his eighteenth year, he was solicited by count D'Arvaux to go to Paris, where he was greatly admired and encouraged.

His principal occupation there, where he continued for twenty years, was painting the portraits of the principal persons about the court, which he did with great success, and for which he was very highly applauded and handsomely rewarded; but the taste they were executed with is by no means of the highest class. He made the most of the lace cravats and ruffles, the rich velvet robes embroidered with devices, &c. then in use, and relieved them from backgrounds full of bustle. But the principal office of portraiture was lost in this mass of tinsel and flutter: the minds of his subjects seem never to have engaged his thoughts, or are, by accident rather than design, brought forth in a few instances; whilst the idle affectation of stage self-importance reigns predominant in them: as if a nobleman could not have the air of a great man, without (to use a common expression) at the same time "looking big."

He died in 1732, at the age of 71.

NETSCHER, CONSTANTINE, another son of Gaspard, who was born at the Hague in 1670. He also practised the art of painting under the tuition of his father, but was so unfortunate as to lose that advantage at the early age of

fourteen. He nevertheless endeavoured to compensate himself for that loss, by the careful study of his father's works; and though he never was able to equal them, yet he arrived at no mean degree of skill in his profession.

His principal practice was in portraiture, in which he was much encouraged; but being of an infirm habit of constitution, he was much interrupted in his labours, and died at the age of 52.

NETSCHKAU, in *Geography*, a town of Saxony, in the Vogtland, situated on the Golsch; 12 miles S.W. of Zwickau.

NETTANGER, a town of Sweden, in Helsingland; 6 miles S. of Hudwicksfval.

NETTE, a town of Westphalia, in the bishopric of Osnabruck; 4 miles N.E. of Osnabruck.

NETTER, THOMAS, in *Biography*, a learned English Carmelite monk, who flourished in the 14th and 15th centuries, was named *Waldensis*, probably from the place of his birth, which is supposed to have been Saffron-Walden. He embraced the religious life in a monastery at London, and was afterwards sent to the university of Oxford. Here he pursued his studies with great success, and became public professor, at first of philosophy, and then of divinity. In the last named faculty he obtained the degree of doctor. He zealously contested the opinions of Wickliff, both in the schools and the pulpit, and was chosen provincial of his order; and by the command of Henry IV. attended, in 1409, the council of Pisa. By Henry V. he was appointed privy councillor, and confessor, and sent to the council of Constance, where he distinguished himself by his speeches against the reformers of that period, the followers of Wickliff and John Hufs. He likewise enjoyed the favour of Henry VI., and went to France with the intention of being present at the coronation at Paris; but he died, as he was on his journey, at Rouen, in the year 1430. He was author of Commentaries on many parts of the Scriptures; also of a work, entitled "*Doctrinale Antiquitatum Fidei Ecclesiæ Catholicæ*," which was published after his death, in 1571, in three volumes folio, and many other works. Moreri.

NETTINGS, in a *Ship*, are a sort of grates made with small ropes, and seized together with rope-yarn, and are laid in the waste of a ship, sometimes, to serve instead of gratings.

NETTING-Sail, in a *Ship*. See SAIL.

NETTLE, the common name of a well-known perennial weed, which may be easily destroyed by cutting the roots, before the plant has perfected its seed.

NETTLE, in *Botany*, &c. See URTICA.

The roots of the common nettle, or *urtica dioica*, have been much recommended in medicine as powerful diuretics; and great virtues have been ascribed to them in calculous complaints, scurvy, gout, jaundice, &c.; and also as styptics; in hæmorrhages of all kinds, particularly in spittings of blood, and overflowings of the menses. Authors add to this, that they are specifics, by way of antidote, against the poison of henbane and hemlock; but this we are not so well assured of. The accounts that have been given of its medicinal virtues have now little credit; and the nettle is considered merely as a simple oleraceous plant, and, when young, is found to be a good substitute for greens, or other pot-herbs. The young shoots of the plant are eaten in the spring, as good against scorbutic complaints.

The sharp hairs upon the fresh leaves of nettles readily enter the skin, and thus produce considerable irritation and inflammation, and therefore have been employed as a rube-



facient, a practice which is termed "urtication," and found of advantage in restoring excitement in paralytic limbs, or in other cases of torpor or lethargy.

The ancients seem to have despised this plant, from its being common, and though supposed to be possessed of great virtues in medicine, neither the Greeks nor Latins have said much about it; nor have the Arabians, who abound in the imaginary virtues of plants, thought the real ones of this herb worth their consideration.

It has, however, been more honoured lately, and notwithstanding its being now the most vile and abject plant among us, as well as the least regarded by the ancients, Johannes Francus, an author of considerable fame, has published a treatise solely upon it: in this he has treated at large on its history and virtues. He describes its stings in a very judicious manner, according to the present doctrine of the microscope, and gives the history of certain worms of singular kinds which feed upon it; and adds its use in our own foods as an wholesome and agreeable pot-herb; in our drink as a substitute for hops, being as well capable of preserving it as those, and in its great service to the farmer in fattening hens.

John Melchior Dreschler, in the year 1717, sustained also a thesis on the virtues and uses of this plant, which has been since printed, ornamented with several cuts. In these two authors we find the whole account of the several uses this common plant has been put to, and may be put to in our manufactures, our domestic and medicinal uses; and, if what they say be true, we must wonder to see so much value overlooked in a herb, only because it is common.

An ingenious manufacturer at Leipzig has contrived to make ropes and cloth of nettle. The species he uses for this purpose is the *urtica urens maxima*, or great stinging nettle; and the process of preparing it as follows: having gathered a quantity of the stalks still green, though half withered, he dried them over his stove; and when the moisture was entirely exhausted, bruised them so as to be able to separate the wood from the bark. By this operation he procured a kind of green hards, which was rubbed and prepared like flax. This new matter being spun, he obtained a greenish-brown thread, very uniform and clear, somewhat resembling worsted. The manufacturer afterwards boiled this thread, when it yielded a greenish juice, and became more white, uniform, and strong; so that by continuing the preparation, he had reason to hope that an excellent thread might be made, and consequently a strong and lasting cloth; and that it might be employed with advantage, not only by rope-makers, but even by weavers, in making fine stuffs.

This practice of dressing the stalks of nettles like flax or hemp, for making ropes, nets, cloth, paper, &c. is not uncommon in some parts of Russia and Siberia.

The stings of nettles are very curious microscopic objects: they consist of an exceedingly fine pointed tapering hollow substance, with a perforation at the point, and a bag at the base. When the sting is pressed upon, it readily punctures the skin, and the same pressure forces up from the bag an acrimonious fluid, which instantly enters into the wound, and excites a burning inflammation. The nettle is said to be poisonous to frogs: for if the plant be thrown into a vessel where these animals are confined, they soon begin to swell, and in a few days perish.

NETTLE, *Bee*. See GALEOPSIS.

NETTLE, *Dead*. See LAMIVM.

NETTLE, *Shrubby Hedge*. See PRASIVM.

NETTLE, *Stinking Dead*. See GALEOPSIS.

NETTLE Tree. See CELTIS.

NETTLE, *Sea*, in Zoology. See MEDUSA, ACTINIA, ANIMAL Flower, and URTICA Marina.

NETTLE-Rash, in Medicine, an eruptive disorder, which has been so named, in consequence of the resemblance of the rash to the appearance produced by the stinging of nettles on the skin.

Although this eruption appears to have been well known to medical practitioners from the time of the Arabians, by whom it was described under the appellation of *sara*, or *effera*; yet it is commonly supposed to have been unknown to the Greek and Roman physicians, as well as the contagious eruptive fevers. We have stated, when treating of the history of MEASLES, that this supposition is probably erroneous; and a perusal of the chapter of Aëtius, borrowed from the physician Herodotus, which treats of "the eruptions that occur in fevers," leaves no doubt that the nettle-rash, among others, was familiar to the writer. (See Aët. Tetrab. ii. ferm. i. cap. 129.) Subsequent authors, in describing this eruption, have borrowed the Arabian appellation of *effera*, (see Sennert. Practicæ, lib. v. p. 1. cap. 27. Heberden Comment. de Morb., and Medical Transf. vol. ii. art. xi.), or have confounded it with erysipelas, (Sydenham, sect. v. cap. 6. De Febri Erysipelatosa,) with purpura, (Juncker Conspect. Med.), or scarlatina. The nosologists (Vogel and Cullen) have adopted the appellation of *urticaria*, from *urtica*, a nettle, by which the disorder is now commonly designated. See Frank, de Cerrand. Homin. Morbis, tom. ii. Willan on Cutaneous Diseases, ord. iii.

The urticaria, or nettle-rash, is characterized by the appearance of round, oval, or longitudinal elevations of the cuticle, which are commonly called *wheels*. These are not very hard, nor permanent, and have no tendency to suppuration: they are usually white at the top, and are often surrounded by a diffuse redness. Although it is in many cases accompanied by fever, the nettle-rash is never contagious. It occurs under several varieties of form, to which Dr. Willan has given distinct specific appellations.

1. The *febrile* nettle-rash is always attended with considerable disorder of the constitution. The eruption is preceded for a couple of days by pain and sickness at the stomach, headache, languor, and drowsiness, with a quick pulse and white furred tongue, and by fits of shivering; and when it appears, it is accompanied by a most troublesome itching or tingling, which is greatly aggravated during the night, so as to prevent sleep for many hours. The eruption occurs on most parts of the body, but most copiously on the shoulders, loins, nates, thighs, and about the knees; sometimes, however, extending to the face. The wheals arise irregularly, first on one part and then on another; and they may be excited on any part of the skin, by strong friction or scratching. During the day, the efflorescence fades, and the wheals in general subside; but both of them return with a febrile paroxysm in the evening. The patches of efflorescence often coalesce, so as to produce a continuous redness; and they are often elevated above the level of the adjoining cuticle, and form dense tumours, with a hard distinct border. When they are numerous, the face, or the limb chiefly affected, appears tense and considerably enlarged. At the latter end of the disorder, the eye-lids are red and tumefied, and there is often a swelling and inflammation on the sides of the feet. On the appearance of the eruption, the pain and sickness at the stomach are generally relieved; but when it disappears, those symptoms return. The whole duration of the *febrile* nettle-rash is seven or eight days. As the



## NETTLE-RASH.

the eruption declines, the tongue becomes clean, the pulse returns to its usual state, and all internal disorder ceases: the efflorescence exhibits a light purple or pink colour, and then gradually disappears, being succeeded by slight exfoliations of the cuticle.

This species of nettle-rash, though not in general dangerous, is extremely troublesome from the violent heat of the skin, and the itching and restlessness with which it is usually attended. It is on some occasions very alarming, especially when the sickness and languor, at the beginning of the eruption, bring on repeated fits of fainting. It occurs chiefly in summer, and affects persons of a plethoric or sanguine habit, especially those who indulge themselves in eating and drinking too freely. It affects even infants, however, under a year old, in consequence of the irritation of teething and of bowel complaints, and renders them hot, fretful, and restless. It is not uncommon, indeed, during the whole period of childhood; and among adults, appears to affect men more frequently than women.

The principal treatment required in the febrile nettle-rash is the administration of a laxative, as of rhubarb and magnesia, in the beginning, which may be repeated according to circumstances; and the restriction of the patient to a light and cooling diet, during the continuance of the fever. He should abstain especially from vinous and fermented liquors; he should avoid hot rooms, and all the expedients, both external and internal, which tend to augment the cutaneous circulation, and produce sweating. Sudorific medicines should be particularly avoided. In the decline of the disease, Peruvian bark, with sulphuric acid, may be taken with great advantage.

2. The urticaria *evanida*, or transitory nettle-rash, of Dr. Willan's classification, is without fever, and without any extensive efflorescence on the skin. The eruption consists sometimes of round wheals, at other times of longitudinal elevations of the skin, resembling those which are produced by the stroke of a whip. They are all white at the top, but in some there is a slight redness at the base. Though often hard and elevated, they do not contain a fluid, nor tend to suppuration. They are occasionally seen on every part of the body, but they are most numerous on parts which are closely covered. The eruption appears and disappears many times in the course of a day and night, according to the temperature of the air, or to the exercise used by the person affected. It may be excited on any part of the body, by strong friction or scratching; but the wheals presently subside again. A violent itching, mixed with a sensation of tingling or stinging, attends the eruption; and these sensations are most troublesome while the patients undress, and for some time after they have lain down in bed, when the eruption is usually most vivid.

This species of nettle-rash continues for various periods, with repeated eruptions, that are more or less extensive in different persons: in some, as Dr. Heberden observes, it lasts but a few days; while in others it goes on for many months, or even for years. It occurs most frequently in persons of the sanguine temperament, especially in those who have a delicate stomach and irritable skin, and in females more frequently than male. The occasional causes are heat, fatigue, watching, anxiety of mind, and a too stimulant diet. It is remarked by Dr. Willan, that although persons affected with the urticaria *evanida* may be capable of business and occasional exertion; yet they are often low-spirited, and they seldom remain for twenty-four hours without some bodily uneasiness, as head-ache, lassitude, pain and sickness in the stomach, aching in the limbs, or an oppressive languor.

This form of urticaria is thought to consist in a morbid irritability of the skin, connected with a similar state of the stomach and intestines. It seems attached to particular constitutions, being produced in some individuals by substances which make no impression on others. Thus rubbing oatmeal on the hands and wrists has excited the nettle-rash in persons otherwise healthy, which became diffused over the whole body, and proved troublesome for a length of time. The same effect has been produced by a slight application of mercurial ointment. Dr. Winterbottom informed Dr. Willan, that a lady of his acquaintance is affected with an eruption of this kind, whenever her skin is touched with the common wall-flower. And Dr. Heberden has mentioned several substances, which produce this disorder through the medium of the stomach; as the wild valerian root, shrimps, honey, and the kernels of fruits. He thinks that it may often be owing to external or mechanical causes, such as the hair of stinging nettles, the down surrounding the pods of cowhage, and the spiculae of cantharides. The following observations of Dr. Willan are of great practical importance.

"When the disease continues long," he says, "without the application of external stimuli, we shall in many cases find it owing to some article in diet, which disturbs digestion. I have desired several persons affected with chronic urticaria to omit first one and then another accustomed article of food or drink, and have thus frequently been able to trace the cause of the symptoms. This appeared to be very different in different persons. In some it was malt-liquor, in others spirit, or spirit and water; in some white wine, in others vinegar; in some fruit, in others sugar; in some fish, in others unprepared vegetables. I must however confess," he adds, "that several cases have occurred to me, where a total alteration of the diet did not produce the least alleviation of the complaint. In such cases I have employed a variety of medicines, but have found the vitriolic and marine acids, with magnesia, rhubarb, or other laxatives, given occasionally, the most successful remedies. Lotions made with brandy, vinegar, saline compounds, &c. cannot be applied extensively enough to produce any considerable effect. Baths, especially warm baths, are necessary for the alleviation of a disease which affects nearly the whole skin. Sea-bathing will be generally found advantageous by those who persevere in the use of it for three or four successive months. A bath prepared by dissolving marine salt in water, is not equally efficacious; in some persons it manifestly aggravates the disorder."

3. In the third species of Dr. Willan, urticaria *perstans*, the wheals are stationary, and the redness, which at first surrounds them, gradually disappears: but the eruption is still attended with itching, especially when the patient becomes warm in bed or is heated by exercise. It does not, however, extend over the body, but appears chiefly on the arms, breast, and thighs. Pain and sickness at the stomach sometimes precede the eruption. Its duration is two or three weeks, and when it is about to terminate the wheals become flat at the top, and then gradually subside, leaving a reddish spot, which is sometimes scurfy, and which continues for several days.

This complaint is relieved by the method of treatment recommended in the foregoing species. Moderate doses of the caustic potash, or liquor potassæ, seemed, in some cases, to shorten the period of the eruption.

4. In the fourth species, urticaria *conferta*, the eruption is full and extensively diffused; and, as the wheals in many places coalesce, or are indented by close contact, they have very irregular forms: when they are singly considered, how-



ever, the size and elevation of them is perhaps less than in any other species of nettle-rash. They are sometimes considerably inflamed at the base, and produce an almost incessant itching and pricking sensation. The eruption often continues many weeks: it appears chiefly in persons who have a dry and swarthy skin, and who are above forty years of age; and is sometimes connected with pain and sickness at the stomach, and sometimes with giddiness and head-ache. The occasional causes seem to be, too much exercise, exposure to heat, rich or high-seasoned food, and the immoderate use of spirituous liquors; and the cure of the complaint is not easily accomplished, without relinquishing these articles of diet, and substituting others that are light and cooling. Together with this plan of diet alterative medicines or tonics are often useful.

5. The *subcutaneous* nettle-rash occurs at distant intervals, and continues only a few days at each return; but the patient is continually harassed, whether the eruption be present or not, with a violent and almost constant tingling in the skin, with other distressing symptoms. The complaint is at first confined to one spot on the leg or arm, and commences there with a sensation of stinging, which is afterwards felt more and more extensively, along the limbs, or perhaps over nearly the whole surface of the body. Sudden changes in the temperature of the air, and agitation of mind, occasion increased uneasiness in the skin, so that pains are sometimes felt, as from a sharp instrument penetrating in different directions, at other times as from needles piercing or pushing the skin upwards. There is usually a stiffness and slight torpor in the muscles of the parts most affected. An appearance of wheals takes place on the arms, chest, or lower extremities, from time to time, especially during the summer, and continues two or three days, but without effecting any change in the sensations above mentioned. Persons affected with these symptoms are liable to frequent pains in the stomach, and to cramps in the muscles of the legs, and usually have a dry and unperspiring skin. The complaint is most commonly partial; but is usually tedious and obstinate. It may be relieved, however, by gentle friction and by the repeated use of warm sea-water baths.

6. The only remaining variety is the *tuberculous* nettle-rash, so called by Dr. Frank of Vienna, in which many of the wheals increase to a large size, forming hard tuberosities, which seem to extend deeply into the muscular flesh, and occasion a contraction in the sinews, with total inability of motion and a sensation of pain in the bones. These tumours are usually whitish at their tops: they rise on the arms, thighs, loins, and calf of the leg, and are very hot and painful for several hours. The eruption commonly takes place at night and disappears by the morning, leaving the patient weak, languid, and sore, as if he had been bruised, or had undergone much fatigue.

This form of nettle-rash is often, like the preceding, tedious and obstinate, and seems to originate from similar causes, and to require similar treatment.

Some persons possess a peculiar idiosyncrasy in respect to particular articles of food, inasmuch that a sudden and universal affection of the skin, very nearly allied to the nettle-rash, is produced immediately or within a short time after these articles are swallowed. The most common sources of this affection are shell-fish, as crabs, lobsters, and especially muscles; but in some constitutions almonds, whether bitter or sweet, the kernels of stone-fruit, raspberries, strawberries, mushrooms, herrings, oatmeal, and various other substances produce the same eruption. In these cases the stomach is commonly first affected with pain, a sense of stricture, and

afterwards with sickness and vomiting; diarrhoea also often comes on. Great heat and swelling suddenly take place, commonly about the face and ears, with much itching, and afterwards extend rapidly to other parts of the body, the whole skin becoming tumid, hot, and stiff. In the course of twenty-four hours or less, these symptoms gradually disappear, and the patient returns to his usual health. For more ample accounts of this singular symptomatic rash, the reader may refer to Dr. Böhren's dissertation, *De Affectu à Mytilorum Esu*, annexed to Dr. Werlhoff's treatise, *De Variolis et Anthracibus*, and to two papers in the *Memoirs of the Academy of Brussels*, tom. i. p. 242, and tom. ii. It is asserted, in both these dissertations, that vinegar or lemon juice, taken internally and applied externally, soon relieves the persons affected by eating muscles; and the author of the latter, M. du Rondeau, affirms, from experience, that, if the muscles be previously dressed with vinegar, they may be eaten with impunity.

NETTLEBED, in *Geography*, a village of England, in Oxfordshire, 18 miles E. of Oxfordshire, and 40 W. of London, remarkable for the elevation of the land on which it is situated.

NETTOLITZ, a town of Bohemia, in the circle of Prachalitz; 6 miles E. of Prachalitz. N. lat. 49° 3'. E. long. 14° 4'.

NETTUNO, a town of Campagna di Roma, on a bay of the Mediterranean, near the ruins of the ancient Antium; 12 miles S.W. of Veletri. N. lat. 41° 31'. E. long. 12° 35'.

NETWORZITZ, a town of Bohemia, in the circle of Beraun; 18 miles S.E. of Beraun.

NEVA, a river of Russia, which flows from the lake of Ladoga, where it takes its rise, across the government of St. Petersburg for 60 versts in length, and falls in several arms into the gulf of Cronstadt. It reaches the city under the walls of the Nevski monastery, after having just above it admitted the waters of the rivulet Ochta. The several mouths of the Neva are all within the city, and are called the Nevka, the Great Nevka, and the Little Nevka, which are from 50 to 100 fathoms broad. The Little Neva goes off from the main river on the right side under the walls of the fortress and flows W.N.W. to the gulf. It is broader than the Great Neva, but more shallow, and purposely rendered unnavigable by Peter the Great, on account of Sweden and the customs. The Great Neva, having distributed its waters, flows in a S.W. direction, from 150 to upwards of 200 fathoms in breadth, and in some places of great depth, into the Cronstadt gulf. This river and its banks have undergone very great improvements. In the quay, at certain distances, openings are made for descending upon the ice in winter, and stairs with spacious landing places and benches, for taking up water, unloading the barks, and the repose and convenience of those who walk here for business or pleasure. Moreover, the face of the wall is furnished with masonry iron rings for the fastening of galliots, barks, barges, and other vessels. This truly imperial quay, says Mr. Tooke, is, for its length, which, deducting the space before the Admiralty, is 1650 fathoms or 3 versts, for strength, magnificence, and the cost of building it, unequalled in Europe, and the constant subject of admiration to foreigners. The water of the Neva, and of its several arms and running canals, which, besides the Ligova canal, supplies the whole city, is to be ranked with the lightest, clearest, and purest of river waters; and it thus amply compensates the want of wells and springs to the city. Occasionally, however, it overflows its banks. Some thousands of ships and barks annually pass and repass the Neva, coming either from the inland



inland parts of the empire, or from foreign countries across the seas, and bringing commodities and provisions to the amount of several millions of rubles, to St. Petersburg. This river receives in its course the Ijora and the Tosna.

NEVALCOTTY, a town of Thibet; 18 miles W. of Sirinagur.

NEUBENDAM, a town of Persia, in Segestan; 80 miles N. of Zareng.

NEUBENDJAM, a town of Persia, in Chufistan; 60 miles N.W. of Schiras.

NEUBERG, a town of the duchy of Stiria; 20 miles N.E. of Pruck.—Also, a town of the duchy of Carniola; 4 miles N. of Crainburg.

NEUBOURG, a town of France, in the department of the Eure, and chief place of a canton, in the district of Louriers. The place contains 1980, and the canton 14,007 inhabitants, on a territory of 187½ kilometres, in 28 communes.

NEUBRUN, a town of the duchy of Wurzburg; 4 miles N. of Eltman.—Also, a town of Germany, in the county of Henneberg; 5 miles S.E. of Meinungen.

NEUBURG, a town of Bavaria, in the Upper Palatinate, on the Schwarza; 19 miles S.E. of Amberg. N. lat. 49° 19'. E. long. 12° 12'.—Also, a city of Bavaria, and capital of a duchy of the same name. The principalities of Neuburg and Sultzbach, formerly separate, are now united. Neuburg enjoys a government of its own; and the prevailing religion is the Roman Catholic. The capital, which is the seat of government, is well situated on a hill by the Danube, and fortified, having in it a palace; 24 miles N.N.E. of Augsburg. N. lat. 48° 40'. E. long. 11° 8'.—Also, a town of Bavaria, in the county of Feldkirch, on the right bank of the Rhine; 5 miles N.N.W. of Feldkirch.—Also, a town of Baden, called "Neuenburg," seated on the Rhine, formerly imperial, but much injured by war; 16 miles N. of Bâle. N. lat. 47° 49'. E. long. 7° 38'.—Also, a town of Prussia, in Pomerelia, on the Vistula; 32 miles S. of Dantzic.—Also, a town of Bavaria, on the left side of the Inn; 4 miles S. of Passau.

NEUCHÂTEL, or NEUFCHÂTEL, *County of*, a principality of Switzerland, in alliance with the Helvetic confederacy before the French revolution, is bounded on the N.W. by France, on the N.E. by the bishopric of Bâle and canton of Berne, on the S.E. by the lake of Neuchâtel, and on the S. by the bailiwick of Granfon. This principality, long ago united to the lordship of Vallengin, stretches from the lake to the limits of Franche Comté, and contains in length from north to south about twelve leagues, and about six in its greatest breadth. The district of Neuchâtel occupies the whole plain, together with the lower parts of the mountains, while Vallengin is totally enclosed within the Jura. Parallel chains of the Jura run from E. to W., and form, even in the most elevated parts, several valleys. The lower grounds of this chain are arable lands and vineyards; the higher consist of large tracts of forest, which in many parts have been cleared and converted into considerable pastures, intermixed with some fields of barley and oats. The number of inhabitants in the principality of Neuchâtel and Vallengin being, in 1752 only 28,017 subjects, and 4318 aliens, amounted in 1784, to 31,576 subjects, and 9704 aliens, which gives an increase of near a fourth part within the space of thirty-two years. In the whole principality are four towns, and sixty-four villages. For an account of the general employment of the inhabitants, we refer to the articles CHAUX *de Fond*, requesting the reader to substitute *locle* for *lode*, and LOCLE. The productions of the principality are wine, both red and white,

fruits, corn, hemp, and flax. Most of the inhabitants are Protestants; but in two districts, *viz.* Lauderon and Cressier, Popery prevails. This country anciently belonged to the last kingdom of Burgundy, with which, in 1032, it devolved to the German empire. In process of time, it passed to the house of Chalons, and in 1694 William III., king of Great Britain, as heir of that family, transferred to Frederic, elector of Brandenburg, afterwards king of Prussia, his interest in Neuchâtel and Vallengin. Several claimants afterwards urged their pretensions to it, and the tribunal of the three estates of Neuchâtel having examined their allegations, decreed, in 1707, in favour of Frederic I., king of Prussia. This sovereign, upon his accession, signed and ratified certain articles, which seemed to establish the prerogative of the prince, and the liberties of the subject; to these others were added in 1768, which terminated the dispute between the sovereign and subject. The prince confers nobility, nominates to the principal offices of state, both civil and military, and appoints the chatelains and mayors, who preside in the courts of justice. His revenues, scarcely amounting to 5000*l.* a-year, arise from certain demesnes, a small land-tax, the tithes of wine and corn, and the tenth of the value on the sale of immoveables. As to commerce, no subject whatever paid any duties, either of importation or exportation, except for foreign wines imported into the town of Neuchâtel. The three estates, according to the ancient constitution, composed of twelve judges, formed the superior tribunal, and received appeals from the inferior courts of justice. The principality of Neuchâtel and Vallengin is divided into a certain number of districts, each of which has its criminal court of justice. But it is needless to enlarge upon the constitution and government of this principality, as it was ceded in 1806 by the king of Prussia to marshal Berthier, one of the generals of France, and the grant confirmed by the emperor Napoleon.

NEUCHÂTEL, *Neufchâtel*, or *Neuenburg*, anciently *Neocomum* or *Novum Castrum*, a small town of Switzerland, capital of the principality above described, lies partly upon a little plain between the lake which here receives the river Scyon, and the Jura, and partly upon the declivity of that mountain, consisting of four principal streets, which contain some elegant edifices, and a castle for its defence, in which the governor resides, and about 3000 inhabitants. The environs are diversified with delightful vineyards, gardens and villas. Between Neuchâtel and Yverdon, the country consists of rude or elegant scenery, contrasted with well cultivated hills, vineyards, and meadows. At the commencement of the last century, commerce was almost wholly unknown in this town, as the ridiculous pride of its being deemed degrading generally prevailed among the inhabitants; a senseless prejudice, which has of late been almost extinguished. The chief article of exportation is wine, produced from the adjacent vineyards, and much esteemed; manufactures also of printed linens and cottons have been established with success; and within some late years, several merchants have raised large fortunes. Several public works and buildings, particularly a town-house, have been lately erected at Neuchâtel; and for the embellishment of their town, the burghers have been indebted to the singular munificence of M. David Pury, late banker of the court at Lisbon, who was a citizen of this burgh, born in 1709, and who died in 1785. His benefactions, during his life, and at his decease, amounted to near 200,000*l.* The citizens have testified their respect for his memory by placing his portrait in one of the apartments in which the government assembles, and a marble bust in the new town-house. This town enjoys considerable privileges; it has the care of the



the police within its own district, and is governed by its own magistracy, consisting of a great and little council. In the year 1530 this town declared for the Reformation. It is said to have been built by the emperor Conrad, about the year 1034; 30 miles S.S.E. of Bâle. N. lat.  $47^{\circ} 2'$ . E. long.  $6^{\circ} 43'$ .

NEUCHÂTEL, *Lake of, or of Yverdon*, a lake which separates the county of Neuchâtel from the cantons of Bern and Friburg, and which stretches from N. to S. about twenty miles in length, and in some places about five in breadth. It is well furnished with various kinds of excellent fish, and its shores near Yverdon are covered with country houses.

NEUCLOSTER, a town of Germany, in the duchy of Schwerin; 10 miles E. of Wismar.—Also, a town of the duchy of Bremen; three miles S.W. of Buxtehude.

NEUDOMA, a river of Norway, which runs into the North sea, 20 miles S.W. of Wardhuys.

NEUDORF, a town of Hungary, formerly fortified, inhabited partly by farmers, and partly by miners; 6 miles E.N.E. of Kapfdorf.—Also, a town of Austria; 8 miles S. of Vienna.—Also, a town of Bohemia, in the circle of Chrudim; 12 miles N.N.E. of Chrudim.—Also, a town of Silesia, in the principality of Oels; 9 miles S.E. of Militsch.—Also, a town of Germany, in the principality of Culmbach; 5 miles S. of Markt Erlbach.

NEUDORFGEN, a town of Prussia, in Oberland; 7 miles S.E. of Marienwerder.

NEUDORFIA, in *Botany*, a name given by Adanson, *Familles des Plantes*, v. 2. 219, to the genus now called *Nolana*, which had been taken for an *Atropa*, or *Bella-donna* by some, and proving new, was called by Ehret *Walkeria*, by Hofer *Zwingera*, and by Schmidel *Teganium*; see *NOLANA*. There was no record of any author or botanist of the name of Neudorf, nor any thing like it.

NEVE ISLAND, in *Geography*, a small island of Scotland, on the N.W. coast of Ilay; 4 miles N.E. of Tonvore.

NEVEL, a town of Russia, in the government of Polotsk; 64 miles N.E. of Polotsk. N. lat.  $59^{\circ} 15'$ . E. long.  $29^{\circ} 54'$ .

NEVEL, a town of France, in the department of the Scheldt, and chief place of a canton, in the district of Ghent. The place contains 2938, and the canton 15,847 inhabitants, on a territory of  $97\frac{1}{2}$  kilometres, in 10 communes.

NEUENBORG, a town of Germany, in the county of Oldenburg; 22 miles N. of Oldenburg.

NEUENBURG, a town of Wurttemberg; 22 miles W. of Stuttgart. In its vicinity are found, among old pits, great quantities of those excellent iron-stones, called glass-heads, or blood-stones, and from their size and figure bohn-erze, or bean-ore.—Also, a town of the duchy of Courland; 18 miles W.N.W. of Mittaw.

NEUENDAMM, a town of the New Mark of Brandenburg; 9 miles N. of Custrin. N. lat.  $52^{\circ} 48'$ . E. long.  $14^{\circ} 52'$ .

NEUENDORF, a town of Westphalia, in the Old Mark of Brandenburg; 4 miles E. of Gardeleben.—Also, a town of Prussia, in the province of Pomerelia; 10 miles S. of Marienburg.

NEUENKIRCHEN, a town of Germany, in the county of Verden; 14 miles E.S.E. of Rotenburg.—Also, a town of Austria; 12 miles S.W. of Ebenfurth.

NEUENPLOSS, a town of Germany, in the principality of Culmbach; six miles N.W. of Bayreuth.

NEUENSTEIN, a town of Germany, in the principality of Hohenloe; 3 miles E. of Ohringen.

NEUERBOURG, a town of France, in the department of the Forests, and chief place of a canton, in the district of Bittbourg; 22 miles N.N.E. of Luxembourg. The place contains 1225, and the canton 5226 inhabitants, on a territory of 195 kilometres, in 12 communes.

NEUERDORF, a town of Germany, in the county of Henneberg; 4 miles N. of Smalkalden.

NEVERI, a river of South America, in the government of Caraccas, which runs into the Caribbean sea, near Barcelonetta. N. lat.  $10^{\circ} 7'$ . W. long.  $65^{\circ} 16'$ .

NEVERN, a town of Bohemia, in the circle of Pilsen; 10 miles S. of Klattau.

NEVERS, a town of France, and principal place of a district, in the department of the Nièvre, formerly capital of the Nivernois, situated on the Loire, at its junction with the Nièvre; before the revolution the see of a bishop, and a place of official importance, containing, besides a cathedral, eleven parish churches, and several religious houses. The principal manufactures of this place are china, glass, and works of enamel. The town contains 10,150, and the canton 16,087 inhabitants, on a territory of  $232\frac{1}{2}$  kilometres, in 15 communes. N. lat.  $46^{\circ} 59'$ . E. long.  $3^{\circ} 14'$ .

NEVERZIN, a town of European Turkey, in Dalmatia, on the Narena; eight miles N.N.W. of Mostar.

NEUFBORG. See NEUBURG.

NEUF-BRISACK, a town of France, in the department of the Upper Rhine, and chief place of a canton, in the district of Colmar. The place contains 1682, and the canton 7925 inhabitants, on a territory of 170 kilometres, in 16 communes.

NEUFCHATEAU, a town of France, and principal place of a district, in the department of the Forests, in the Ardennes, before the revolution a strong, but now a mean place; 12 miles N.W. of Arlon. The town contains 648, and the canton 6399 inhabitants, on a territory of 335 kilometres, in 17 communes.—Also, a town of France, and principal place of a district, in the department of the Vosges, seated on the Meuse; 16 miles W. of Mirecourt. The place contains 2700, and the canton 13,508 inhabitants, on a territory of 345 kilometres, in 28 communes. N. lat.  $43^{\circ} 22'$ . E. long.  $5^{\circ} 48'$ .

NEUFCHÂTEL, a town of France, in the department of the Aisne, and chief place of a canton, in the district of Laon; 11 miles E.S.E. of Laon. The place contains 496, and the canton 8175 inhabitants, on a territory of  $232\frac{1}{2}$  kilometres, in 28 communes.—Also, a town of France, and principal place of a district, in the department of the Lower Seine; 18 miles S.E. of Dieppe. The place contains 2838, and the canton 11,350 inhabitants, on a territory of  $182\frac{1}{2}$  kilometres, in 27 communes. N. lat.  $49^{\circ} 44'$ . E. long.  $1^{\circ} 30'$ .

NEUGEDYN, a town of Bohemia, in the circle of Pilsen; 30 miles S.S.W. of Pilsen. N. lat.  $49^{\circ} 23'$ . E. long.  $12^{\circ} 51'$ .

NEUHASSEN, a town of Courland; 18 miles S. of Goldingen.

NEUHAUS, or *Hradecz Gindrzicbu*, a town of Bohemia, in the circle of Bechin; 27 miles S.S.E. of Bechin. N. lat.  $49^{\circ} 12'$ . E. long.  $14^{\circ} 53'$ .

NEUHAUS, or *Nienhaus*, a town of Westphalia, in the bishopric of Paderborn, at the conflux of the Alme and Lippe: the usual residence of the bishop; two miles N.N.E. of Paderborn. N. lat.  $51^{\circ} 42'$ . E. long.  $8^{\circ} 14'$ .

NEUHAUS, a town of Germany, in the principality of Hesse Darmstadt; 11 miles S.E. of Worms.—Also, a town



town of Bavaria, in the Upper Palatinate, on the Nao; 18 miles N. of Straubing.

NEUHAUSZ, a town of the duchy of Bremen, near the mouth of the Oste, with a safe harbour, and formerly the resort of trading ships annually exceeding 100 in number; but the entrance has of late been rendered dangerous by a sand-bank, which has arisen at the conflux of the Oste into the Elbe, so that only few foreign ships can visit it; 19 miles N.W. of Stade. N. lat.  $53^{\circ} 52'$ . E. long.  $8^{\circ} 27'$ .—Also, a town of Germany, in the principality of Coburg; 10 miles E. of Coburg.

NEUHEUSEL, a town of Hungary, on the Neitra; 32 miles E.S.E. of Presburg. N. lat.  $48^{\circ} 2'$ . E. long.  $18^{\circ} 3'$ .

NEUHEUSL, a town of the duchy of Carinthia; five miles W.S.W. of Lavamund.

NEUHOF, a town of Germany, in the bishopric of Fulda; six miles S.S.W. of Fulda.—Also, a town of Bohemia, in the circle of Saatz; 10 miles N. of Eger.—Also, a town of Germany, in the principality of Bayreuth; 12 miles N. of Anspach.—Also, a town of Prussia, in the province of Bartenland; three miles W. of Rastenburg.

NEUHOFEN, a town of Austria; 16 miles E. of Steyr.

NEUHORNBAACH, a town of France, in the department of Mont-Tonnerre, and chief place of a canton, in the district of Deux-Ponts. The place contains 972, and the canton 3121 inhabitants, in 12 communes.

NEVIL-Holt Waters. See *Nevil-Holt WATER*.

NEVIL's Bay, in *Geography*, a bay on the W. shore of Hudson's Bay. N. lat.  $61^{\circ} 58'$ . W. long.  $94^{\circ}$ .

NEUILLE-Pont de Pierre, a town of France, in the department of the Indre and Loire, and chief place of a canton, in the district of Tours. The place contains 1730, and the canton 8220 inhabitants, on a territory of  $307\frac{1}{2}$  kilometres, in 11 communes.

NEVILLI TESTA. See *TESTA*.

NEUILLY, in *Geography*, a town of France, in the department of the Seine, and chief place of a canton, in the district of St. Denis. The place contains 1500, and the canton 9542 inhabitants, on a territory of  $44\frac{5}{16}$  kilometres, in six communes.

NEUILLY-en-Thal, a town of France, in the department of the Oise, and chief place of a canton, in the district of Senlis. The place contains 915, and the canton 9614 inhabitants, on a territory of 130 kilometres, in 16 communes.

NEUILLY-le-Real, a town of France, in the department of the Allier, and chief place of a canton, in the district of Moulins. The place contains 1156, and the canton 5467 inhabitants, on a territory of 340 kilometres, in 10 communes.

NEUILLY-les-Langres, a town of France, in the department of the Upper Marne, and chief place of a canton, in the district of Langres. The place contains 1014, and the canton 6901 inhabitants, on a territory of 175 kilometres, in 17 communes.

NEUILLY-St-Fronch, a town of France, in the department of the Aisne, and chief place of a canton, in the district of Chateau-Thierry; nine miles N.W. of it. The place contains 1807, and the canton 11,220 inhabitants, on a territory of  $272\frac{1}{2}$  kilometres, in 35 communes.

NEVIN, or NEFYN, a small borough and market-town in the hundred of Dinlleyn, and county of Caernarvon, North Wales, is situated on the coast of the Irish sea, and has a small pier, which is found very useful for the herring

fishery and coasting vessels. It was constituted a free borough by Edward, the Black Prince, and is at present one of the contributory boroughs with Caernarvon, in returning one member to the British senate. Here Edward I. in 1284, celebrated his triumph over the liberties of Wales, which had so long defied the utmost exertions of his predecessors for its subjugation. At this time he held a round table, in imitation of the hero Arthur; the concourse was prodigious, for not only the nobility of England, but a vast number of distinguished foreigners graced the festival with their presence. The market day in this town is Saturday, and there are four fairs during the year. According to the population returns of 1811, it contains 280 houses and 1777 inhabitants.

About a mile from Nevin, on the shore, is Porth-yn-Llyn, most probably a port of the Romans, as vestiges of a strong entrenchment, apparently the work of that people, are still visible in the vicinity. In the parish of Llaneglin, several miles to the south, many Roman urns have been dug up at different times, and opposite to the extremity of the peninsula of Caernarvon is the small island of Bardsey, once noted for its abbey, and supposed to have been one of the seats of the Coldeï or Culdees, the first order of religious recluses in Britain. Beauties of England and Wales, vol. xvii. Carlisle's Topographical Dictionary of Wales, two vols. 4to.

NEVIS, one of the Leeward Charibbæan islands in the West Indies, is a beautiful little spot, consisting of a single mountain, rising like a cone in an easy ascent from the sea: the circumference of its base not exceeding eight English leagues. It is supposed to have derived its name from Columbus, its discoverer, who called it "Nieves," or "The Snows," from its resemblance to a mountain of the same name in Spain; or, perhaps, a white smoke was seen to issue from the summit, which appeared like snow, and that it derived its name from that circumstance. That it owed its origin to some volcanic explosion, we can have no reason to question; for near the summit there is still visible a hollow, or crater, which contains a hot spring, strongly impregnated with sulphur; and sulphur is frequently found in substance, in neighbouring gullies and cavities of the earth. It is well watered, and the land is generally fertile; and even the summit furnishes yams and other esculent vegetables. The soil is stony; the best is a loose black mould, on a clay; and in some places the upper stratum is a stiff clay, the cultivation of which requires labour, that is amply compensated by the produce. Sugar is its only staple production; and in general it yields one hoghead of 16 cwt. per acre from all the canes that are annually cut; and the productive land being about 4000 acres, the produce of sugar amounts to as many hogheads. This small island is divided into five parishes; and it contains a town called "Charles-town," the seat of government and port of entry, besides which there are two other shipping-places, called "Indian-cattle" and "New-castle." The principal fortification is at Charles-town, and is called "Charles Fort." The commandant is appointed by the crown, but receives a salary from the island. In the absence of the governor-general, the government is administered by the president of the council, which council consists of six members besides the president. The house of assembly is composed of 15 representatives, three for each parish. The administration of common law is under the direction of a chief justice, and two assistant judges, and there is an office for the registry of deeds. The number of white inhabitants is stated by Mr. Edwards not to exceed 600, while the negroes amount



amount to about 10,000. The former compose a militia, in which there is a troop consisting of 50 horse, well mounted and accoutred.

The English first established themselves in this island in the year 1628, under the protection and encouragement of sir Thomas Warner. He was succeeded by Mr. Lake, who completed what Mr. Warner had wisely begun, so that under his administration Nevis rose to opulence and importance. N. lat.  $17^{\circ} 14'$ . W. long.  $62^{\circ} 35'$ . Edwards's W. Ind. vol. i.

NEUKALDEN, or NEUKAHLEN, a town of the duchy of Mecklenburg, on a lake; 28 miles S.S.E. of Rostock. N. lat.  $53^{\circ} 49'$ . E. long.  $12^{\circ} 46'$ .

NEUKIRCH, a town of Prussia, in the province of Ermeland; 13 miles N.E. of Elbing.—Also, a town of Silesia, in the principality of Oppau; 10 miles E. of Jagerndorf. N. lat.  $50^{\circ}$ . E. long.  $17^{\circ} 15'$ .

NEUKIRCHEN, a town of Switzerland, and capital of a bailiwick, in the canton of Schaffhausen; five miles W. of Schaffhausen.—Also, a town of Bavaria; 22 miles N.N.E. of Ratisbon.—Also, a town of Austria; six miles S.S.E. of Enghelhartel.—Also, a town of the principality of Hesse; 22 miles N.N.E. of Marburg. N. lat.  $50^{\circ} 40'$ . E. long.  $27^{\circ} 1'$ .—Also, a town of Bavaria; five miles S.S.E. of Furt.—Also, a town of Saxony, in the circle of Erzgebirge; five miles S. of Chemnitz.—Also, a town of Saxony, in the Vogtland; 10 miles S.E. of Oelnitz.

NEUKRUG, a town of Prussia, in the palatinate of Culm; 10 miles of E. Culm.

NEULA, a town of Germany, in the principality of Culmbach, on the Selbitz; three miles S.S.E. of Lichtenberg.

NE ULTRA, or *Sir Thomas Roe's Welcome*, a narrow strait in New North Wales, between N. lat.  $62^{\circ}$  and  $63^{\circ}$ .

NEUMAGEN, a town of France, in the department of the Sarre, on the side of the Moselle; 11 miles E.N.E. of Treves. N. lat.  $49^{\circ} 54'$ . E. long.  $6^{\circ} 58'$ .

NEUMANN, JOHN-GEORGE, in *Biography*, a learned German Lutheran divine, was born in the year 1661 at Mertz, a village of the country of Mersebourg, in the circle of Saxony, of which his father was minister. He commenced his academical studies at Zittau, whence he removed, in 1680, to the university of Wittemberg. He afterwards spent some time at Strasburg, and visited several of the most celebrated German universities. He returned to Wittemberg, and was appointed professor of poetry in 1690, and librarian to the university in 1692. After this he was appointed theological professor, assessor to the consistory, and provost of the castle-chapel. He died in 1709, in the 49th year of his age. He was author of many learned "Dissertations," and other treatises on moral, religious, and controversial subjects, of which a list is given in the supplement to the Historical Dictionary, published at Basil. Moreri.

NEUMANN, CASPAR, an eminent chemist, was born at Zullichau, in the duchy of Crossen, where his father practised as an apothecary, in July 1682. Caspar was educated for the same profession, and commenced the practice of it at Unruhstadt, in Poland; but, after a short residence there, he went to Berlin in 1705, and was employed several years in the capacity of traveller for the pharmaceutical establishment of the king of Prussia. In consequence of the ability which he manifested in the performance of this duty, the king sent him to prosecute his studies at the university of Halle, and subsequently defrayed the expences of a

journey, for the purpose of acquiring chemical information. He commenced this chemical tour in 1711 by visiting the mines of Germany; and thence he went to Holland, where he profited by the instructions of the celebrated Boerhaave. He then visited England, and during his sojourn here, had the misfortune to lose his royal patron, Frederick I., by death. His talents and character, however, soon afforded him relief from this temporary embarrassment; for, on his return to the continent, he was detained at Franeker by Cyprianus, who employed him in the execution of many chemical experiments; and he was at the same time invited to Berlin. At that time, however, he preferred accompanying George I., king of England, to Hanover, whither he went in 1716. But he subsequently visited Berlin, for the purpose of settling some private affairs, where he obtained the friendship of Stahl, through whose influence at court he was again sent on a tour of chemical investigation, through England, France, and Italy, where he was introduced to all the celebrated chemists of the day. On his return to Berlin, he was appointed apothecary to the court; and in 1723, when the king instituted the Royal College of Medicine and Surgery, he was nominated professor of practical chemistry to that body, and was elected a member of it in the following year. In 1725, he was chosen a fellow of the Royal Society of London; and in 1727, was honoured with the degree of M.D. by the university of Halle. In the course of the same year, he travelled through Silesia and Moravia to Vienna; and on his return through Bohemia he visited the baths of Toplitz, and examined the mines, in passing by the way of Dresden and Freyberg, with all the attention of a chemical philosopher.

Neumann likewise obtained other honours, which were due to his scientific character; having been elected a member of the academy Naturæ Curiosorum in 1728, and of the Institute of Bologna in 1734. The king also conferred on him the dignity of aulic counsellor. He died at Berlin in October, 1737, and left several memoirs, which were published in the collections of the societies of which he was a member, and some separate treatises, relating to chemical subjects; especially dissertations on the qualities of the fixed alkalis of camphor, castor, amber, opium, alcohol, &c. Eloy Dict. Hist. de la Méd.

NEUMARCK, in *Geography*, a town of Bohemia, in the circle of Pilsen; six miles S. of Teufing.—Also, a town of Bohemia, in the circle of Pilsen; six miles S. of Taus.—Also, a town of the principality of Culmbach; 10 miles N. of Bayreuth.

NEUMARK, a town of Saxony, in the circle of Erzgebirge; six miles S.W. of Zwickau.—Also, a town of the duchy of Stiria; 26 miles S.W. of Judenburg.—Also, a town of the duchy of Carniola; 10 miles N. of Crainburg.—Also, a town of Hinder Pomerania; 10 miles S.W. of Star-gard.—Also, a town of the archbishopric of Salzburg; 12 miles N.N.E. of Salzburg.—Also, a town of the Tyrolese; 21 miles N. of Trent.—Also, a town of Bohemia, in the circle of Pilsen; 35 miles S.W. of Pilsen. N. lat.  $49^{\circ} 20'$ . E. long.  $12^{\circ} 52'$ .—Also, a town of Saxony, in the Vogtland; 11 miles N.N.E. of Plauen.—Also, a town of the principality of Weimar; five miles N.W. of Weimar.

NEUMARK, or *Novemastro*, a town of Prussia, in the territory of Culm; 44 miles E. of Culm.

NEUMARKT, a town of Silesia, in the principality of Breslau; 19 miles W. of Breslau. N. lat.  $51^{\circ} 7'$ . E. long.  $16^{\circ} 38'$ .—Also, a town of Bavaria, on the Roth; 41 miles E.N.E. of Munich.—Also, a town of Bavaria; 22 miles S.W. of Amberg.

NEUME,



**NEUME**, a term in *Canto Fermo*. The neume, or neuma, is a kind of short recapitulation of the chant of a mode or ecclesiastical tone, which is made at the end of a chant or anthem by a simple variety or extempore division of sounds without words. Roman Catholics authorize this custom by a passage in St. Augustine, which says, that when we are unable to find words worthy of the divinity, we do well to address him with confused sounds of joy and thanksgiving: "For to whom are such extatic sounds due, unless to the Supreme Being? and how can we celebrate his ineffable goodness, when we are equally unable to adore him in silence, and to find any other expressions for our transports than inarticulate sounds?" Amen and Hallelujah are of this kind.

**NEUMUNSTER**, in *Geography*, a town of the Duchy of Holstein; 18 miles S.W. of Kiel.

**NEUNG-sur-Barron**, a town of France, in the department of the Loire and Cher, and chief place of a canton, in the district of Romorantin. The place contains 1150, and the canton 4544 inhabitants, on a territory of 285 kilometres, in 11 communes.

**NEUNKIRCHEN**, a town of Germany in the principality of Culmbach; four miles S.E. of Bayreuth.—Also, a town of Bavaria, in the bishopric of Bamberg; eight miles S. of Forchheim.

**NEVONSKA**, a town of Russia, in the government of Irkutsk; 92 miles N.N.W. of Ilimsk.

**NEUPEURN**, a town of Bavaria; 38 miles W. of Salzburg.

**NEURACHNE**, in *Botany*, from *νευρον*, a nerve, and *αχνη*, a glume or husk, alluding to the nerves, or ribs, of the calyx-valves. Brown. Prod. Nov. Holl. v. 1. 196.—Class and order, *Triandria Digynia*. Nat. Ord. *Gramina*.

**Ess. Ch.** Calyx of two ribbed, acute, hispid, coriaceous valves, hardened when in seed; the outer one rather the smallest. Flowers dissimilar; the outer one neuter, of two valves, of which the outermost nearly resembles the calyx; inner hermaphrodite, of two membranous pellucid valves. Scales two beneath the germen. Stigmas feathery. Seed unconnected, falling out of the membranous corolla.

1. *N. alopecuroidea*.—Gathered by Mr. Brown on the south coast of New Holland. A perennial grass, with numerous upright stems, whose knots are bearded with silky hairs. Leaves flat and short. Spike solitary, ovate, resembling that of the Fox-tail Grass, *Alopecurus*, simple, destitute of any involucre.

**NEURADA**, so called, as Linnæus himself tells us, *Phil. Bot.* 183, from *νευρα*, a nerve, in allusion to the structure of the plant; probably adverting to the strong interbranching ribs or nerves of the seed-vessel. Whether he, or Bernard de Jussieu, who seems to have given the name, had also in view *νευρις* of the Greeks; or *νευραδα*, which Dioscorides says is the Ionian appellation of his *πρόνισον*, *Astragalus creticus*, Willd. Sp. Pl. v. 3. 1330; a plant supposed, from its gummy nature, to be useful in consolidating nerves or sinews; does not appear. Possibly the long round stems of our *Neurada*, which are clothed with white tenacious cottony down, suggested the idea of a nerve or tendon. It is much to be wished, that the authors of names would, in such obscure cases, be more explicit.—Linn. Gen. 232. Schreb. 313. Willd. Sp. Pl. v. 2. 821. Mart. Mill. Dict. v. 2. Juss. 336. Lamarck Illustr. t. 393. Gærtn. t. 32.—Class and order, *Decandria Decagynia*. Nat. Ord. *Succulenta*, Linn. *Rosacea*, Juss.; but this author justly doubts, whether his uncle and Adanson have not led him into an error; the genus surely belongs to his *Ficoidea*.

VOL. XXIV.

**Gen. Ch.** Cal. Perianth superior, minute, in five deep, at length hardened, segments. Cor. Petals five, equal, oval, sessile, erect. Stam. Filaments ten, awl-shaped, shorter than the calyx; anthers simple. Pist. Germen inferior, gibbous below; styles ten, very short, approximated; stigmas capitate. Peric. Capsule orbicular, depressed, convex beneath, covered all over with ascending thorns, of ten cells. Seeds solitary.

**Ess. Ch.** Calyx in five deep permanent segments. Petals five. Capsule inferior, thorny, with ten cells and ten seeds.

**Obs.** We have corrected the generic description of Linnæus from his own manuscripts. Forskall conceives the spines which cover the fruit, and which are found in a soft state on the germen, to be in fact a multiplicity of segments in the calyx, clothing the germen. It appears that the five teeth, which Linnæus takes for the only calyx, are hardened in the fruit, and assimilate themselves to the rest. Nevertheless the analogy of *Mesembryanthemum*, to which this genus is unquestionably akin, justifies the opinion of Linnæus rather than that of Forskall.

1. *N. procumbens*. Prostrate Neurada. Linn. Sp. Pl. 631. Willd. n. 1. Forsk. Egypt-Arab. 90. Desfont. Atlant. v. 1. 369.—Native of dry sandy ground in Egypt, Arabia, &c. Professor Desfontaines gathered it in similar situations near Tunis. The root is said to be annual. Stems several, prostrate, woody at the base, round, leafy, with numerous short axillary branches. They are clothed like every part of the herbage, even the flowers and fruit, except only the corolla and organs of impregnation, with a dense, depressed, snow-white, cottony down. Leaves alternate, stalked, ovate-oblong, obtuse; tapering at the base, pinnatifid and notched; less cottony on their upper surface. Flowers axillary, solitary, rather stalked.

Linnæus, who raised this plant from seeds sent him by Bernard de Jussieu, see Hort. Ups. 117, recommends sowing the entire fruit, in the driest possible soil. Forskall remarks that, in a state of nature, the whole capsule remains, like a ring, encircling the root. So we find it in a specimen from Desfontaines. Thus nine of the seeds prove superfluous, as one capsule produces but a single plant. The only figure of the *Neurada* is that of Lamarck, the synonyms of Shaw and Plukenet, cited by Linnæus, belonging to *Forsskaea tenacissima*. It is unknown in our gardens.

**NEURIS**, in the *Writings of the Ancients*, the name given to a species of marble, otherwise called *elaphesum*, and *proconnesum*. It was much used by the Roman statuary, and was dug in a small island that lay between Paros and Cyzicus. It was of a dusky or blueish-white, and was variegated with fine and slender veins of black, often beautifully disposed, and in the bodies of the naked statues resembling the course of the veins.

**NEURITICS**, or **NERVINES**, formed from *νευρον*, *nervus*, in *Medicine*, remedies proper for diseases of the nerves, and nervous parts; as the membranes, ligaments, &c.

Such are betony, lavender, rosemary, sage, laurel, marjoram, and others among the cephalics.

**NEUROBATES**, in *Antiquity*, a rope-dancer. See **DANCER**.

**NEURODE**, in *Geography*, a town of Silesia, in the circle of Glatz, where are manufactures of cloth and serges, with a considerable trade in snuff and tobacco; 10 miles N.N.E. of Glatz. N. lat. 50° 22'. E. long. 14° 19'.

**NEUROGRAPHIA**, in *Anatomy*, a description of the nerves.



Raim. Vieussens, a physician of Montpellier, has an excellent treatise in Latin, under the title of "Neurographia Univerfalis;" where he shews, that there are more ramifications of the nerves in the skin than in the muscles and all the other parts.

Duncan, another physician of the same place, has also a treatise called "Neurographia Rationalis."

NEUROLOGY, *Νευρολογία*, a discourse of the nerves.

Neurology seems to be of less extent than neurography, inasmuch as the latter may be understood not only of discourses of the nerves, but also of figures and engravings, representing them; whereas the former is restrained to discoursing alone. Willis has given a fine neurology, in his "Anatome Cerebri." See *NERVOUS System*.

NEUROPORA, in *Botany*, so called by Commerfon, from *νευρον*, a nerve, and *πυρος*, a callosity, because there are axillary callous ulcerations, as it were, at the principal veins underneath, is referred by Jussieu to *ANTIDESMA*; see that article.

NEUROPTERA, in *Entomology*, the name of the fourth order of insects, according to the Linnæan system, so called from the words *νευρον* and *πτερον*, signifying *nerve-winged*, because the insects of this order are remarkable for the nerved or reticulated appearance of their wings, the fibres running into ramifications and decussations over the whole surface. This order is well exemplified in the *LIBELLULÆ*, or Dragon-flies (which see), in which the characteristic of the order is very conspicuous. The wings are always four in number. This order includes seven genera, *viz.*

Ephemera,	Panorpa,
Hemerobius,	Phryganea,
Libellula,	Raphidia.
Myrmeleon,	

The insects of this order are chiefly aquatic; residing in the waters as caterpillar; and flying about their surface in the perfect state.

NEUROTROTOS, (from *νευρον*, a nerve, and *τρωσχω*, to wound,) a person who has received a wound of a nerve.

NEUSALTZ, in *Geography*, a town of Silesia, in the principality of Glogau, on the Oder; 12 miles N.W. of Glogau. N. lat.  $51^{\circ} 48'$ . E. long.  $15^{\circ} 45'$ .

NEUSATZ, a town of Hungary, formerly called "Peter Wardein Schanz," separated by the Danube from Peter Wardein in Slavonia, peopled by Rascians, and fortified: the see of a Greek bishop, and made a royal and free town in the year 1751.

NEUSCHLOSS, a town of Bohemia, in the circle of Saatz; six miles E. of Saatz.—Also, a town of Bohemia, in the circle of Leitmeritz; three miles S. of Leypa.—Also, a town of Bohemia, in the circle of Koniggratz; nine miles W.S.W. of Trautenau.—Also, a town of Silesia, giving name to a lordship on the borders of Poland; five miles E. of Militsch.

NEUSE, a river of North Carolina, which rises above Hillsborough, and after a course of more than 500 miles, falls into Pamlico Sound; 70 miles below Newbern; 12 miles above which it is navigable for ships.

NEUSIDL, a town of Hungary, on a lake of the same name; 24 miles S.W. of Presburg. The lake is 13 miles long, and three wide.

NEUSLING, a town of Germany, in the margraviate of Anspach; seven miles E. of Weissenburg.

NEUSOL, a town of Hungary, which is royal and free, and the best of the mine towns, seated on the river Gran. It has six churches and a school, with about 5000 inha-

bitants, chiefly Germans and Sclavonians. It has a weekly market, and in the adjacent mountains is copper ore. The smelting works render the air insalubrious; 104 miles E. of Vienna. N. lat.  $48^{\circ} 47'$ . E. long.  $19^{\circ} 25'$ .

NEUSS, a town of France, in the department of the Roer, and chief place of a canton, in the district of Crévelt. The place contains 4423, and the canton 13,853 inhabitants, in 24 communes.

NEUSTADT, a town of France, in the department of Mont Tonnerre, and chief place of a canton, in the district of Spire, on the Hart; 14 miles W. of Spire. The place contains 2875, and the canton 17,683 inhabitants, in 27 communes. N. lat.  $49^{\circ} 20'$ . E. long.  $8^{\circ} 10'$ .—Also, a town of the principality of Weimar; 10 miles N.E. of Weimar.—Also, a town of Germany, in the lordship of Stuhlingen; 16 miles N.N.W. of it.—Also, a town of Bavaria, on the Nab; 45 miles N. of Bamberg.—Also, a town of the archbishopric of Salzburg; 12 miles N.N.E. of Salzburg.—Also, a town of Prussia, in the circle of Samland; 30 miles S. of Memel.—Also, a town of Austria, formerly a bishop's see, suppressed in 1784. Here are a manufacture of china and a military school; 10 miles S.S.E. of Baden. N. lat.  $48^{\circ} 18'$ . E. long.  $16^{\circ} 13'$ .—Also, a town of Bohemia, in Koniggratz; 12 miles N.E. of it. N. lat.  $50^{\circ} 15'$ . E. long.  $15^{\circ} 57'$ .—Also, a town of Moravia, in the circle of Olmutz; 10 miles N. of Olmutz.—Also, a town of Hesse; 12 miles E. of Marburg.—Also, a town of Sweden, in the province of Finland, near the gulf of Bothnia; 24 miles N. of Abo.—Also, a town of Westphalia, in the principality of Wolfenbutter; 24 miles S.E. of Goslar.—Also, a sea-port town of the duchy of Holstein, with a spacious harbour on the coast of the Baltic. The castle has been used for state prisoners; 17 miles N.N.E. of Lubeck. N. lat.  $54^{\circ} 7'$ . E. long.  $10^{\circ} 55'$ .—Also, a town of Bavaria, on the Danube; 16 miles E. of Ingolstadt. N. lat.  $48^{\circ} 44'$ . E. long.  $11^{\circ} 45'$ .—Also, a town of Westphalia; 40 miles E. of Gottingen. N. lat.  $51^{\circ} 35'$ . E. long.  $10^{\circ} 56'$ .—Also, a town of Germany, situated at the foot of a mountain, on which was formerly a citadel. Its trade was formerly considerable in iron; but of late the burghers subsist chiefly by agriculture, and breeding of cattle; 26 miles E.S.E. of Bonn. N. lat.  $50^{\circ} 57'$ . E. long.  $7^{\circ} 45'$ .—Also, a town of Wurtemberg; six miles N.E. of Heilbron. N. lat.  $49^{\circ} 18'$ . E. long.  $9^{\circ} 20'$ .

NEUSTADT, or *Prudnik*, a town of Silesia, in the principality of Oppeln, inferior only to Oppeln; 25 miles S.S.W. of it. N. lat.  $50^{\circ} 12'$ . E. long.  $17^{\circ} 30'$ .

NEUSTADT *am Aisch*, a town of Germany, in Culmbach, on the Aisch; 23 miles W.N.W. of Nuremberg.

NEUSTADT *am Culmen*, a town of Germany, in Culmbach, taking its name from two mountains between which it is situated; 12 miles S.E. of Bayreuth.

NEUSTADT *am Dosse*, a town of the Middle Mark of Brandenburg, on the Dosse, famous for its manufacture of plate-glass; 36 miles N.W. of Berlin. N. lat.  $52^{\circ} 32'$ . E. long.  $12^{\circ} 30'$ .

NEUSTADT *Eberswalde*, a town of the Middle Mark of Brandenburg, on the Finow canal, that forms a communication between the Havel and the Oder; 28 miles N.E. of Berlin. N. lat.  $52^{\circ} 54'$ . E. long.  $13^{\circ} 50'$ .

NEUSTADT *an der Heyde*, a town of Germany, in the principality of Coburg; six miles N.E. of Coburg. N. lat.  $50^{\circ} 20'$ . E. long.  $10^{\circ} 14'$ .

NEUSTADT *pres Hohenstein*, a town of Saxony, in the margraviate of Meissen; 20 miles E. of Dresden. N. lat.  $51^{\circ} 4'$ . E. long.  $14^{\circ} 16'$ .

NEUSTADT *am Orla*, a town of Saxony, and capital of the



the circle of the same name, situated on the Orla. The circle includes nine towns, and more than 220 villages. The town of Neustadt has a citadel, two churches, a court of judicature for the circle, and a mine office; 80 miles W.S.W. of Dresden. N. lat.  $50^{\circ} 39'$ . E. long.  $11^{\circ} 48'$ .

NEUSTADT *in der Rosenau*, a town of Germany, in the county of Wertheim; 18 miles S.S.E. of Francfort on the Maine.

NEUSTADT *am Rubenberg*, a town of Westphalia, in Calenberg, situated on the Leina; 12 miles W.N.W. of Hanover. N. lat.  $52^{\circ} 33'$ . E. long.  $9^{\circ} 33'$ .

NEUSTADT *am Saale*, a town of the duchy of Wurzburg, on the Saal; 13 miles N. of Schweinfurt.

NEUSTADT, or *Neustadt pres de Schneeberg*, a town of Saxony, in the circle of Erzgebirg; 17 miles S.S.W. of Chemnitz. N. lat.  $50^{\circ} 30'$ . E. long.  $12^{\circ} 35'$ .

NEUSTADT *ober Wiesenthal*, a town of Saxony, in the circle of Erzgebirg, on the borders of Bohemia; 11 miles S.S.E. of Schwartzburg.

NEUSTADTEL, a town of Silesia, in the principality of Glogau; 15 miles W. of Gros Glogau. N. lat.  $51^{\circ} 40'$ . E. long.  $15^{\circ} 45'$ .

NEUSTADTEL, or *Neustadt*, a town of Bohemia, in the circle of Pilsen; 32 miles W. of Pilsen. N. lat.  $49^{\circ} 39'$ . E. long.  $12^{\circ} 45'$ .

NEUSTADTL, or NOWE-MENTOR, a town of Moravia, in the circle of Brunn; six miles E. of Saar.—Also, a town of Bohemia, in the circle of Bolelaw; 14 miles E.N.E. of Krottau.

NEUSTATT, a town of the principality of Nassau-Dillenburg; six miles W.S.W. of Dillenburg.

NEUSTIFFT, a town of the county of Tyrol; 13 miles S.W. of Inspruck.

NEUTER, a person indifferent, who has espoused neither party, and is neither friend nor foe.

NEUTER, in *Grammar*, denotes a sort of gender in nouns which are neither masculine nor feminine. See GENDER.

NEUTER *Verb.* See VERB.

NEUTRAL SALTS, among *Chemists*, such as do not abound with an excess of acid or alkali. See NEUTRALIZATION.

Formerly those only were called neutral salts, which were composed of acids and alkalies united together to the point of saturation, so that they had no acid nor alkaline property, and thence they were called neutral. But now this name is commonly extended to combinations of acids with all substances, with which they can so unite, that they lose entirely or mostly their acid qualities; as, for instance, when they are united with earthy or metallic substances. See SALT.

Mr. Boyle also gives the appellation neutral to a sort of spirits, differing, in divers qualities, both from vinous, acid, and urinous spirits. These he also calls *anonymous* and *adiaphorous* spirits.

NEUTRALITY, the state of a person or thing that is *neutral*.

NEUTRALITY, *Armed, Treaty of*, in *Modern History*, a treaty for the protection of the navigation of the North, which was planned by Vergennes, in conformity to the views and wishes of Catharine II., empress of Russia, in the year 1780, and to which almost all the potentates of Europe successively acceded. This minister, having gained his point in depriving the English of the assistance of the Russian fleet, formed this extensive plan for effecting his political purposes. Well acquainted with the haughty spirit of the empress, Vergennes artfully contrived to interest her in the execution of his project. He wrought upon the ministers of Den-

mark and Sweden to open it to her. They performed their task with so much address, that she adopted it without hesitation; and she almost persuaded herself to believe it a creature of her own invention, or at least she seemed desirous of persuading others that this was the case. Accordingly she issued a manifesto, declaratory of this armed neutrality. From that time forward she resolved to use force for the protection of her ships; and she proposed to the court of Copenhagen, and to that of Stockholm, to equip each of them a squadron, which should combine with hers for the defence of their neutrality. The wishes of Denmark had anticipated this invitation. The prudent minister (count Bernstorff), who guided the councils of that kingdom, sensibly felt the importance of an alliance, without which, the English would have derided all the armaments of the North. He promised to subscribe to the treaty proposed by the empress. Sweden was less prompt in acceding to it. She was withheld by France herself, who dexterously engaged to start some difficulties, in order to excite Russia to remove them. After the empress had made the necessary explanations, Gustavus gave orders to his minister at Petersburg to sign the treaty of the armed neutrality, which was done on the 21st of July, the plenipotentiary of Denmark having done the same on the 19th day of the month. Catharine had not waited for the accession of these two potentates for notifying her resolution to the courts of London, Versailles, and Madrid. She delivered to them by her ambassadors a declaration, in which she complained, that the law of nations had been violated towards her subjects; that their commerce had been confined, and navigation interrupted; and that to prevent such abuses for the time to come, she was preparing to assert, by force, the rights which undoubtedly belonged to neutral nations. The cabinet of St. James's replied, that, from the very commencement of the war, it had issued the most precise and unequivocal orders to all commanders of vessels respecting the Russian flag. Notwithstanding this assurance, the English continued for some time to stop the Russian ships, and try the validity of their captures by the British court of admiralty. The empress refused to acknowledge the competency of that court. The contest was beginning to take a serious turn. The English put an end to it by releasing the vessels. Prussia, Austria, and even Portugal, concurred with the other neutral states; and thus a power, which, however great in other respects, was of inferior note in a maritime view, was now seen dictating a new code of maritime laws to mankind, in many respects essentially differing from those which had for several hundred years been established among commercial nations, and going directly to the overthrow of that sovereignty, or pre-eminence on the ocean, which had been so long claimed and maintained by Great Britain; but which, that power not being in a situation directly to contravene, seemed now to be settled as a part of the law of nations. Sir James Harris, the English minister at Petersburg, exerted every means which he could employ to break the league of the neutral powers, or at least to prevent Russia from protecting the vessels of the other nations; but all his efforts proved ineffectual.

In the following year, 1781, the armed neutrality displayed its flag in all the northern seas. The Russian squadrons visited the coasts of the Mediterranean; and commerce was efficaciously protected in every quarter. The Dutch, who had hesitated to enter into the naval confederacy, soon repented of their scruples, and in the war with England, which was the consequence of their determination, they were supported by the empress of Russia, who offered her mediation both to Holland and England. On the part of



the latter, her pacific intentions were unavailing; and peace with Holland was the last that was concluded.

The great principle of the armed neutrality was, that free bottoms make free goods; and this was carried to such an extent, that neutral states were entitled to carry on their commerce with the belligerent parties, in a state of war, with the same degree of convenience, ease, and safety, which they might have practised in time of peace. It was farther laid down, that the neutral bottom has a right to convey, and to render free, all things from any one port of a belligerent state, and even coastwise, to another without let or impediment; saving only such matters as might be deemed contraband in consequence of the stipulations of former treaties. The courts of France and Spain cordially approved this system, as it suited their own views, till at a future time they might find opportunity to discharge themselves from the obligation of it. The solitary court of London was obliged to suppress her indignation at an injury which she could not at present resent or remedy. She expostulated with the court of Petersburg, professed respect for her flag and commerce, and declared a continuance of the same friendly disposition and conduct manifested on former occasions. The principal claims of the confederate powers were thus specified; 1. That all neutral vessels may freely navigate from one port to another on the coasts of the nations at war. 2. That the effects of the belligerent powers shall be safe in all neutral vessels, with the exception of prohibited mercantile goods. 3. That the empress understands, by prohibited mercantile goods, such as are specified in the articles 10 and 11 of her treaty of commerce with Great Britain, extending her obligation in that respect to the other powers at war. 4. That by a port blocked up, is to be understood only a port so strictly watched by the ships of the powers which attack it, that to enter it would be dangerous. 5. That these principles should be admitted as the sole rule whereby to decide the legality of prizes. The empress added, that in publishing these articles, she declared, that to enforce their execution, and to protect the honour of her flag, the security of her commerce, and the navigation of her subjects, she was about to arm the greater part of her naval forces. That her marine should not in anywise injure the neutrality, which she was disposed to observe as long as she should not be provoked and obliged to exceed the bounds of a just moderation, and the most perfect impartiality. See Tooke's Life of Catharine II. vol. ii.

**NEUTRALIZATION**, in *Chemistry*, the act of combining an acid with an alkali, in such proportion that the compound may not exhibit either acid or alkaline qualities, and is in what is called a neutral state. Under the same circumstances the acid and the alkali are said to be mutually saturated or neutralized. In the old nomenclature, this language, relative to salts, was more appropriate than in the present state of chemistry. Acids used then to be called *acid salts*, and the alkalis *alkaline salts*, while those compounds consisting of an acid and an alkali, where neither the acid nor the alkali predominated, were called, for the sake of distinction, *neutral salts*. The test commonly employed for ascertaining the state of neutrality is a vegetable blue, such as an infusion of violets, or paper stained with almost any vegetable blue. If the colour is not changed, the compound may be deemed neutral. If the colour be changed to red, the acid prevails; but if a green, the alkali predominates.

**NEUVIE**, in *Geography*, a town of France, in the department of the Dordogne, and chief place of a canton, in the district of Ribérac; 12 miles S.W. of Périgueux. The place contains 1816, and the canton 8569 inhabitants, on a territory of 182½ kilometres, in 16 communes.—Also, a

town of France, in the department of the Corrèze, and chief place of a canton, in the district of Ussel; 10 miles S. of Ussel. The place contains 2037, and the canton 7924 inhabitants, on a territory of 247½ kilometres, in 10 communes.

**NEUVILLE**, a town of France, in the department of the Loiret, and chief place of a canton, in the district of Orleans. The place contains 1887, and the canton 9253 inhabitants, on a territory of 325 kilometres, in 16 communes.—Also, a town of France, in the department of the Rhône, and chief place of a canton, in the district of Lyons; six miles from Lyons. The place contains 1950, and the canton 12,147 inhabitants, on a territory of 80 kilometres, in 13 communes.—Also, a town of France, in the department of the Vienne, and chief place of a canton, in the district of Poitiers; seven miles N.N.W. of Poitiers. The place contains 2718, and the canton 9060 inhabitants, on a territory of 177½ kilometres, in 11 communes.—Also, a town of Canada, on the St. Laurence; 14 miles S.W. of Quebec.

**NEUVY-St.-Sepulchre**, a town of France, in the department of the Indre, and chief place of a canton, in the district of La Châtre; nine miles W. of La Châtre. The place contains 1672, and the canton 9500 inhabitants, on a territory of 382½ kilometres, in 14 communes.

**NEUWALDE**, a town of Silesia, in the principality of Neisse; seven miles N.N.E. of Ziegenhals.

**NEUWARP**, a town of Anterior Pomerania, on a lake communicating with the Frische Haff; 10 miles E. of Uckermunde. N. lat 53° 48'. E. long. 14° 15'.

**NEUWEDEL**, a town of Brandenburg, in the New Mark, on the Drage; 30 miles S.E. of Stargard. N. lat. 53° 14'. E. long. 15° 55'.

**NEUWIED**, or **NEW WIED**, a town of Germany, in the county of Wied Runkel, on the Rhine. This is a neat town of considerable commercial importance, and its prosperity has been gradually advancing with its trade and manufactures; four miles below Coblenz. N. lat. 50° 29'. E. long. 7° 28'.

**NEW**, a river of America, in North Carolina, which, after a short course, discharges itself into the ocean, through New River inlet by a wide but shoal mouth. In the winter season it abounds with mullet.

**NEW ALBION**. See *New Albion*.

**NEW ANDALUSIA**. See *New Andalusia*.

**NEW ANDOVER**. See *East Andover*.

**NEW ANTICARIA**, a town of New Spain; 34 leagues northward of Acapulco.

**NEW ANTIGUERA**, an episcopal city of New Spain, in the province of Guaxaca, erected into a bishopric by Paul III. in 1547. Its noble cathedral is supported by marble pillars.

**NEWARK-upon-Trent**, a borough and market-town, situated in the south division of the wapentake of Newark, and county of Nottingham, England, is a place of great antiquity, and supposed to have risen on the ruins of the Roman stations of "Ad Pontem" and "Crocilana," which were undoubtedly situated in this vicinity. Stukeley hazards the conjecture that it was the much disputed Sidnaceaster of the Saxons, and Throsby remarks that it was the actual site of "Ad Pontem," but neither of these opinions are generally admitted to be correct. Newark, according to Mr. Dickenson, means New-work, which, he says, evidently implies that there was something older on which it was ingrafted, though whether the new erection took place in the time of the Romans, or the Saxons, he thinks cannot be precisely determined. It is certain, however, that this place had acquired its present

name



name before the reign of Edward the Confessor, as it is mentioned in his time as the property of Leofric, earl of Mercia, and given by him to the monastery of Stow, near Lincoln. What was its condition or extent at this period is unknown, nor does any circumstance deserving attention occur respecting it till about the year 1126, when we are informed that Alexander, bishop of Lincoln, built "a large and magnificent castle here," which was soon afterwards seized from him by king Stephen, and held for many years in the possession of the crown. During the troublesome reign of king John, this fortress was besieged by the rebellious barons, and resolutely defended till news arrived of the approach of the monarch, when the assailants thought proper to retire; the king, in consequence, subsequently entered the town without opposition; but so fatigued and exhausted by care, and the difficulties of a long march, that he was attacked with a dysentery, which, in a few days, put an end to his life. In the succeeding reign, Newark castle was fortified by the barons who had supported the interests of prince Lewis, and were basely deserted by him. The earl of Pembroke marched against them, and having closely invested the castle, compelled them to surrender at discretion, after a resistance of eight days. Throughout the time of the grand rebellion in the seventeenth century, the inhabitants of this town were conspicuous for their loyalty. By the exertions made to render the place defensible, and the bravery of the royalists, it became a most important garrison, and not only held in subjection the county of Northampton, but laid a great part of Lincolnshire under contribution. It stood three very desperate sieges, in all of which much resolution and gallantry were displayed, nor were the parliamentary forces able to obtain possession of it till it surrendered to the Scotch army by order of the king.

Newark, subsequent to the erection of the castle, seems to have advanced rapidly in extent and population. Edward VI. constituted it a borough by charter in the third year of his reign. This deed has been confirmed, and many new privileges added, by several of his successors, and particularly by Charles II., under whose charter the town is now governed. A mayor, recorder, twelve aldermen, a common council of the principal inhabitants, and a town-clerk, form the corporation. Two members are returned from this borough to serve in parliament. The petty sessions of two hundreds are held here, besides those of the borough. The market is on Wednesday, and is well supplied with all kinds of provisions. In the market-place, which is a large square, and said to have been formerly much more extensive than at present, stands the town-hall, an elegant stone building, erected in 1805, at an expence of 17,000*l.*, paid out of the funds of the testamentary estates left for the advantage of the town. It consists of three stories, containing the courts and requisite offices and apartments belonging to the corporation, and a large room appropriated to concerts and assemblies. The workhouse of this town is one of the most commodious and best regulated in the kingdom, but its prison was, till very lately at least, a disgrace to any civilized nation, and still requires considerable amelioration. Here is a grammar-school of acknowledged respectability, founded by Dr. Thomas Magnus in 1529, as an inscription over the door imports. The church is a truly superb and capacious edifice of the age of Henry VI. The tower is finely ornamented with arch-work and sculpture, and supports a lofty spire, adorned with statues of the twelve apostles in niches. In the windows appear some paintings on glass, representing the various events of our Saviour's life, together with a number of armorial bearings. Close to the river stand the ruins of the

castle, which, notwithstanding the demolition it has undergone, still present an august and imposing aspect. The north front is the most perfect, having a massive square tower at the north-east angle, and another in the centre of the elevation. Between these, in the principal story, and among some large magnificent windows, is an immense projecting window, exhibiting a perfect specimen of those anciently called "bays or bowers." Under the great hall, which seems to have been of later erection than the rest of the building, is a most curious arched vault or crypt, supported by a row of pillars in the centre, and having loopholes and embrasures towards the river. At the end of this vault is a subterraneous passage, said to have gone a great way under ground, but it has never been explored. The bridge thrown over the Trent here is constructed of brick, faced with stone, and was the gift of the earl of Northumberland.

The religious foundations in this town, during the times of popery, were a house of Austin friars, and another of Observant friars; besides an hospital dedicated to St. Leonard, built by bishop Alexander, in the latter end of the reign of Henry I.; and one belonging to the Knights Templars, founded previous to the year 1185. Near Northgate was a great house, called the Spittle, which was burnt down in the civil wars, and supposed by some authors, but without sufficient evidence, to have been the hospital of St. Leonard. In the church-yard stood an edifice called the chantry free-school, and a song-school, for an organist and six choristers. There was likewise in Newark a second church, but this was demolished during one of the three last sieges in the seventeenth century.

The trade and manufactures of Newark are tolerably extensive. In Northgate is a very large brewery, which was accustomed to carry on a vast commerce with the north of Europe, before the development of the continental system. The manufacture of cotton has been lately introduced, and affords employment to a considerable number of the poor. The counties of Nottingham, Lincoln, Derby, Stafford, Chester, Warwick, and part of York, are chiefly supplied with malt made in this town and its vicinity. Two large establishments for the weaving and bleaching of coarse linen are in a thriving condition, as is likewise an infant manufactory of sail-cloth and facking. Corn and coals form important articles of traffic in Newark; and there is annually a very large market, or fair, for cheese, held on the Wednesday preceding the second day of October.

According to the parliamentary returns of 1801, this town contained only 1390 houses, and a population of 6730 persons. By the late returns (1811), however, it appears that a very material increase has taken place; the houses being there stated to amount to 1504, and the inhabitants to 7236 in number. The parish of Newark comprises about 800 acres.

The vicinity of this town has been much cut up by military works in the time of the civil wars, many traces of which remain. Beacon-hill, where are several extensive quarries of gypsum, was the scene of action between the royal army under prince Rupert, and the parliamentary troops, commanded by sir John Meldrum, who had laid siege to the castle in 1643. In this engagement the royalists were completely successful, though much inferior in number to the republicans. The fosse-road passes close to this hill. At Coddington, on the Sleaford road, stands a handsome seat of S. C. Coldough, esq.; and directly north from hence is the Bruff or Brough, pointed out by Stukeley as the undoubted Crocolana of the Romans. Balderton, two miles from Newark, is remarkable for a curious Saxon porch to its church,



church, wrought with zig-zag mouldings and ozes' heads. Elveston, or Elston, situated about four miles south from the town, has acquired just celebrity as the birth-place of the late Dr. Darwin, whose scientific and literary labours, and active benevolence, reflect lustre on the human character. Between this village and that of Stoke, or, as some antiquaries assert, of Thorpe, Henry VII. engaged and defeated the army of the earl of Lincoln, who had espoused the cause of the impostor Lambert Simnel. This action was fought in the month of June, in the year 1487, but much difference of opinion prevails with respect to the exact day: Hall calls it the 6th, Stowe the 16th, and Holinshed the 20th. Tradition affirms that Henry fixed his head quarters, before the battle, in Elston fields, close to the village. For an account of some other places in this vicinity, see *SOUTHWELL. History and Antiquities of the Town of Newark*, by William Dickenson, esq., Newark edit. 1806. 4to. *Beauties of England and Wales*, vol. xii.

**NEWARK**, a township of America, in Essex county, Vermont.—Also, a post-town of New Jersey, and capital of Essex county, pleasantly situated at a small distance W. of Passaick river, near its mouth on Newark bay; nine miles W. of New York city. It is a handsome flourishing town, famous for its excellent cyder, and as being the seat of the largest shoe manufacture in the state. It has also a large and elegant Presbyterian meeting-house, an episcopal church, a court-house, and a gaol. Its academy was established in 1792. This town, which has several tanneries and quarries of stones for building, was originally settled by emigrants from Branford, in Connecticut, in the year 1662.—Also, a town lately laid out by the British in Upper Canada, on the river which connects lakes Erie and Ontario, directly opposite to Niagara town and fort. The town is handsome, about a mile square, with its streets at right angles, and contains about 150 houses.—Also, a township, comprehending the above town, in the county of Lincoln, Upper Canada, and lying on the W. side of Niagara river, opposite to the fort.

**NEWARK Bay**, a bay of New Jersey, formed by the confluence of Passaick and Hackinsack rivers from the N., and separated from that part of North river opposite to New York city, by Bergen neck on the E. This neck forms, with Staten island on the S., a narrow channel from the bay to North river eastward. Newark bay also communicates with Rariton bay, at the mouth of Rariton river, by a channel in a S.W. direction along the W. side of Staten island. The water passage from New York to Elizabeth-town point, 15 miles long, is through this bay.

**NEW ASHFORD.** See *New ASHFORD*.

**NEW ATHENS**, or *Tioga Point*, stands on the post-road in America from Cooperstown to Williamsburg, in Luzerne county, Pennsylvania, on the point of land formed by the confluence of Tioga river with the E. branch of Susquehannah river, in N. lat.  $41^{\circ} 54'$ . W. long.  $76^{\circ} 32'$ ; 20 miles S.E. by E. of Newtown in New York.

**NEW BANK**, one of the banks of Newfoundland; six miles S. of Cape Ballard.

**NEW BEDFORD.** See *New BEDFORD*.

**NEWBERN**, one of the eastern maritime districts of North Carolina, comprehending the counties of Carteret, Jones, Craven, Beaufort, Hyde, Pitt, Wayne, Glasgow, Lenoir, and Johnston, and containing 60,433 inhabitants, including 20,134 slaves.—Also, the capital of the above district, which is a post-town and port of entry in Craven county, situated on a flat, sandy point of land, formed by the confluence of the rivers Neus on the N. and Trent on the S. This is the largest town in the state, containing about 400

houses and 2467 inhabitants, of whom 1298 are slaves. The edifices are all constructed of wood, except the palace, the church, the gaol, and two dwelling houses, which are of brick. The palace was formerly the residence of the governor, but it is now decayed and applied to the use of schools. Newbern carries on a considerable trade to the West Indies and the different states, in tar, pitch, turpentine, lumber, corn, &c. The exports in 1794 amounted to 69,615 dollars: 501 miles S. of Philadelphia. N. lat.  $35^{\circ} 20'$ . W. long.  $77^{\circ} 25'$ .

**NEW BISCAY.** See *New BISCAY*.

**NEWBLISS**, a post-town of the county of Monaghan, Ireland; 55 miles N.W. by N. from Dublin.

**NEWBOROUGH.** See *GOREY*.

**NEWBOROUGH**, a borough, market-town, and parish, in the hundred of Menai, and county of Anglesey, North Wales, is situated on the river Braint, or Breint, about three miles from the shore of Caernarvon bay. The British name of this place is Rhos-Hir, or Vair. Edward I. constituted it a corporation by charter, and annexed it to the royalties of the prince of Wales; and this deed afterwards received the sanction of parliament, in the reign of Edward III. In the time of Henry VIII. and the first year of Edward VI. Newborough sent members to parliament, but the latter monarch was pleased to transfer the elective franchise from hence to Beaumaris, in the second year of his sovereignty. The government of the town is now vested in a mayor, two bailiffs, a recorder, and other assistant officers, who continue to hold regular courts. The revenue of the corporation is chiefly derived from about four hundred acres of excellent land, (situated in the vicinity,) which the magistrates have it in contemplation to inclose. This was an ancient manor of the British princes, who had a llys or palace here; and here was also the seat of justice for the whole comot of Menai, and which continued so long after Wales became subject to England. The chief manufacture carried on by the inhabitants is that of mats, netting, and cordage, made of sea reed-grass. A few persons are likewise engaged in fishing, and a considerable number in the labours of agriculture. This town gives title of baron to the family of Wynn. It has a weekly market on Tuesday, and, according to the parliamentary returns of 1811, contains 183 houses, and a population of 750 persons. The amount of acres in the parish is estimated at 1000.

Adjoining to the town, and near the ruins of a building, which has been generally regarded as the domestic chapel of the ancient palace, may be seen a large upright stone, inscribed "Filius Ulrici erexit hunc lapidem," and supposed to commemorate some Danish chieftain who had fallen in battle here, as it is well ascertained that the Danes made frequent descents on this coast. At Llanddwyyn, a small, narrow peninsula, projecting into the bay of Caernarvon, stood an oratory of St. Dwyynwen, the British Venus, or tutelary saint of lovers, who flourished in the fifth century. In after-times a Benedictine abbey was erected upon the same spot, and seems to have been one of the richest in the county. In the time of Owen Glyndwr its wealth gave rise to a very ferocious predatory quarrel, and in the visitation made by the order of Henry VIII. it is mentioned among the most valuable prebends belonging to the see of Bangor.

Llanedwen, lying about five miles to the north-east of Newborough, is distinguished as the birth-place of Henry Rowlands, bishop of Bangor, and author of the "*Mona Antiqua Restorata*," who died in 1723. Almost close to the village is the ferry of Moel-y-Don, by which Agricola crossed over into the island of Anglesey, and where the army of Edward I. sustained a signal defeat in 1282. The field of Maes-



Maes-mawr-gad, or the plain of the great army, has been supposed by some to be the scene of the first sanguinary battle recorded by Tacitus as fought in this county; and by others to allude to an engagement between Gryffydd ap Cynan, king of Gwynedd, and the usurper Trahaearn ap Iared, which took place in 1082. Plas-Newydd, a seat of the earl of Uxbridge, is situated close to the north bank of the Menai, and occupies a portion of those groves, once so celebrated as embowering the principal temples of the ancient Druids. Here, and for several miles round, appear numerous memorials of the religious rites practised during the prevalence of that extraordinary worship. Near the mansion of Plas-Newydd is a large cromlech, with another of smaller dimensions close to it. Particular accounts of these, with an engraving, are contained in King's "Munimenta Antiqua." Near a path-way leading into the road from Plas-Newydd to Llanidan is a large carnedd, which was opened about seventy years ago, and found to contain a vault strewed with an immense quantity of human bones. This is conjectured to have had a subterraneous connection with the cromlech, and to have formed a place of confinement for the wretched victims destined to be sacrificed. At Tan-ben-Ceven, on the river Brient, are two large entrenchments of a square form, generally regarded as outworks to the chief seat of the Arch-Druid at Tre'r Dryw. The Bryn Gwyn, Brien Gwyn, or royal tribunal of this sovereign priest, still continues distinctly marked. It is a circular hollow, one hundred and eighty feet in diameter, surrounded by a vast agger of earth and stones. Near it was one of the Gorseddau's, now dispersed, but once consisting of a great heap of stones, on which sat aloft the Druid whose duty it was to harangue and instruct the people when collected on any important occasion. Pennant's Tour in Wales, vol. iii. Beauties of England and Wales, vol. xvii. by the Rev. J. Evans.

**NEW BOSTON.** See *New Boston*.

**NEW BRAINTREE**, a town of America, in the county of Worcester, between Rutland or Oakham on the E. and Hardwick on the W.; 21 miles N.W. of Worcester. It has 875 inhabitants.

**NEW BRITAIN.** See *New Britain*.

**NEW BRUNSWICK.** See *New Brunswick*.

**NEWBURGH**, a royal borough, market-town, and parish, in the county of Fife, Scotland, is situated on the south bank of the river Tay. This place was very early constituted a borough of regality, by one of the abbots of Lindores, under whose charter it was governed till the secularization of the abbey by James VI. Charles I. granted the charter by which it now enjoys all the privileges and immunities of any royal borough in North Britain, except the right of voting for a representative in the national councils, and of sending a delegate to the convention of boroughs. The revenue of the community is very inconsiderable, scarcely exceeding 25*l.* per annum, but the magistracy notwithstanding make a respectable appearance. A court is held weekly, with the usual marks of dignity, and it retains a clerk for recording its public proceedings. The town of Newburgh forms one principal street of considerable length, having small suburbs at each end, and a lane leading towards the shore from its centre. Most of the houses on each side of the lane, and in the suburbs, are of late erection; as well as a great proportion of those in the main street. Hence, and in consequence of alterations in such as have not been entirely rebuilt, Newburgh is capable of containing double the amount of inhabitants it could have done formerly, though it probably does not occupy a rood more ground now than at the beginning of the last century. At that time the gene-

rality of the houses were low built, and covered with a thatch of straw or of reeds, but for many years a better style of architecture has prevailed, and at present the town has even pretensions to a more than ordinary degree of neatness. The chief street is excellently paved, and kept in repair by means of an assessment from proprietors within the borough. The principal employment of the inhabitants is that of weaving cloth. Accustomed in early life to handle the oar and the plough, as well as the shuttle, they frequently betake themselves either to the sea, or to agriculture, whenever the price of the kinds of cloth they are in the practice of manufacturing suffers any material depreciation in the market. Most of the persons employed in this trade weave their own yarn, and carry their own webs to market, that is to say, dispose of them to a few individuals in the town, or neighbourhood, by whom they are resold to the merchants of Dundee, Cupar, and Glasgow. Close to the borough, but independent of the jurisdiction of the magistrates, is the harbour of Newburgh, consisting of three contiguous piers, projecting into the south deep of the Tay, and of several dwelling-houses, store-houses, and other conveniences for commerce. These piers form very safe stations for the vessels employed in the trade on the river; and though none of any burden can properly be said to belong to Newburgh, and few are freighted to it, except with coals or lime, they are seldom devoid of shipping, as the generality of vessels for Perth must wait the flow of the tide here, and not a few of them unload a part of their cargoes, before they can venture up further, even with the tide. Hence arises a good deal of activity at Newburgh; and considerable quantities of grain are annually exported for Edinburgh and London.

The parish of Newburgh is comparatively of inconsiderable extent, and only deserving of notice on account of some vestiges of antiquity which it contains. Of these, the ruins of the ancient abbey of Lindores are the most noted. They are situated at the north-east extremity of the parish, on a gentle eminence, rising from the edge of the river Tay. This monastery was founded in the twelfth century, and filled with monks of the order of St. Benedict. The extent of ground occupied by the buildings of the abbey in former times cannot now be ascertained, as many of them have been completely razed to the very foundations. It was no doubt, however, one of the most superb and magnificent on the northern side of the Forth. The luxury and wealth of its ecclesiastics are strongly marked by the pains they have evidently taken, in the economy of their garden, to secure all the delicacies of the table. Near the abbey stands the ancient mansion of Lindores, once a baronial residence belonging to the family of Lesley.

The other monuments of ancient art, in this vicinity, are two crosses, one called the cross of Mugdrum, and the other Macduff's cross. The former stands only four yards from the shore, and though much mutilated still displays remains of the figures of horses, but there is no appearance of any inscription. The latter, which is placed in an opening on the Ochil hills, and which, at present, exhibits one large quadrilateral block of free-stone, rudely indented in several places, is traditionally said to have pointed out the limits of the jurisdiction of the powerful Thane of Fife. Concerning Mugdrum cross even tradition is silent. According to the parliamentary reports of 1811, the whole parish contains 283 houses, and a population of 1951 persons. Sinclair's Statistical Account of Scotland, vol. viii. Beauties of Scotland, vol. iv.

**NEWBURGH**, a post-town of America, in Orange county, New York, containing 3258 inhabitants, and consisting of between 50 and 60 houses, and a Presbyterian church,



church, situated on a gentle ascent from the river. The country to the N. is well cultivated, and affords a rich prospect. Vessels of considerable burden may load and unload at the wharfs, and many vessels are annually built, so that the place is encouraging to industry, and thriving.

NEWBURN, a parish of Scotland, in the county of Fife; eight miles S.S.W. of St. Andrew's.

NEWBURY, a large market-town in the hundred of Faircros, Berkshire, England, is situated in a fertile valley on the banks of the river Kennet, 17 miles distant from Reading, and 56 from London. Though its name implies a modern borough, it was a town of considerable importance at the time of the Norman survey, and then known by the name of Uluritone, probably a corruption of Ulwardetone, from Ulward, who possessed it in the time of Edward the Confessor. Newbury was originally the name of a castle which was built by one of the earls of Perch, and this appellation might be transferred to the town instead of its ancient Saxon name. The town was incorporated in 1586 by queen Elizabeth; and is governed by a mayor, high-steward, recorder, six aldermen, and twenty-four capital burghesses. It sent two members to parliament in the 30th year of Edward I., and in the 11th of Edward III. was also represented by three persons in a great council, held on account of trade at Westminster. Extensive manufactories of woollen cloth were established in this town, and furnished the inhabitants with employment for several centuries; but the clothing business has been removed into the more western parts of the kingdom. It does not appear that the town has suffered by the removal; but on the contrary, from the influx of trade, consequent on the ready communication it now has by canals with London and Bristol, its opulence as well as its population has been on the increase. In the year 1555, when the clothing business was at its greatest height, the number of inhabitants was 1600. The return to parliament in the year 1801 states the houses to be 965, the number of persons 4275; and by the late survey in the year 1811, the houses are returned as 1028; the inhabitants as 4898: these returns do not include the tything of Speenhamland, which is apparently part of the town, but is in the parish of Speen; and contains about 150 houses and upwards of 700 inhabitants. The town consists chiefly of three principal streets, which are spacious and well built. The old market-house is an ancient timber building, over which is the gaol and a town-hall: the new market-house is a brick edifice of modern date; above it is an assembly-room, sometimes called the new town-hall, where the corporation transact their private business; the public meetings being held at the old hall. The market, which is held on Thursdays by prescriptive right, is a great mart for corn, and is under excellent regulations, tending to defeat the artifices of monopolizers: four fairs are kept annually, and a statute for hiring servants.

On the banks of the Kennet, in the vicinity of Newbury, are several mills, which supply the cities of London and Bristol with great quantities of flour. The parish church of Newbury is a plain stone structure, built in the reign of Henry VIII., principally at the charge of John Winchcombe, a wealthy clothier of this town, of which he was a native. He died in the year 1519, and lies buried in the church, by the name of John Smallwode, alias Winchcombe. A brass plate, with his effigy, was formerly placed over his tomb, but it is now fixed against the east wall of the north aisle. The history of this celebrated person, who was generally known by the name of Jack of Newbury, is rather of a marvellous cast: he appears to have carried on the clothing business to a great extent; having an hundred looms

in constant use, in his own house, for the weaving of broad cloth only. He is recorded to have assisted the king with an hundred of his men, all armed and clothed at his own expence, in the expedition against Scotland, which was terminated by the battle of Flodden Field. The building called his manufactory, is now divided into tenements, respectively occupied as a bookseller's, a hair dresser's, and an inn; the latter bearing the sign of Jack of Newbury. The charitable endowments in this town are numerous; not less than sixty-almshouses being established on different foundations. One of these, called St. Bartholomew's hospital, is said to have been founded by king John, who granted a fair for its support. It was formerly under the government of a master, warden, or prior: but is now, by charter of queen Elizabeth, vested in the corporation. The original endowment has been increased by various benefactions. In the year 1624, Mr. John Kendrick of Reading bequeathed 4000*l* to provide a workhouse and employment for the poor of Newbury. Great part of this gift appears to have been lost: with a portion of it the wharf and other premises were purchased; and the remainder is lent, without interest, in sums of fifty pounds, to weavers, for three years.

In the dreadful contest between Charles I. and his parliament, Newbury became remarkable for being the scene of action in two succeeding years. The first battle was fought September 18, 1643, on a common called the Wash; the other in the fields between Newbury, Speen, and Shaw, October 27, 1644. Those who were killed in the first engagement were deposited beneath two tumuli near the field of battle; whilst those who fell in the second contest were interred in a large pit near Newbury church. Many vestiges of these sanguinary conflicts have, at different times, been found in the surrounding country.

About a mile north-west from Newbury is the small village and parish of Speen, a place of considerable antiquity, deriving its name from the Roman *Spinæ*, which is supposed to have been situated in this vicinity. Speen had formerly a market on Mondays, which was granted, in the year 1218, by William Marshall, earl of Pembroke.

At a small distance from Speen, on the north, but in the parish of Shaw, is Donnington Grove, late the seat of William Brummell, esq. The house, which is pleasantly situated under a ridge of woody hills, was built by the late James Petit Andrews, esq. author of "The History of Great Britain, connected with the Chronology of Europe," and was for some time his residence.

On an eminence north-east of the Grove are the remains of Donnington castle, which was formerly a place of great importance; and by commanding the western road, gave to its possessors a considerable degree of authority. It is said to have been built by sir Richard Abberbury in the reign of Richard II. About the year 1397 Geoffrey Chaucer, the father of English poetry, became possessed of this castle, and spent the close of his life in retirement here. From the Chaucers the castle descended, by marriage, to the dukes of Suffolk. In the reign of James I. it belonged to the family of the Packers, whose heiress married Dr. Hartley, the ancestor of Mr. Hartley the present possessor. During the civil wars of Charles I. this castle was a post of great consequence; being fortified as a garrison for the king, and entrusted to the command of colonel Boys, who bravely defended it during a long siege. Camden, in whose time the castle was entire, describes it as "a small, but very neat place, seated on the brow of a woody hill, having a fine prospect, and lighted by windows on every side." The walls nearly fronted the cardinal points of the compass, the entrance being at the east end. It was defended by four round towers placed on the



the angles. The length of the east end, including the towers, was 85 feet; the extent from east to west 120 feet. All this part is destroyed; the remains consist of the stone gate-house, with its two towers, and a small part of the east wall. The gateway is in good preservation, and the place for the port-cullis is still visible.

To the east of Donnington castle, about a mile distant, stands Shaw house, a large edifice, built in the reign of queen Elizabeth by Mr. Doleman, an eminent clothier, in whose family the estate continued till about the year 1727, when it was purchased by James, duke of Chandos, who sold it, in 1746, to Joseph Andrews, esq. grandfather to sir Joseph Andrews, bart. who now possesses it.

About a mile westward from Speen is Benham place, a villa of lord Craven's. The house, an elegant structure of the Ionic order, was completed in 1775; it was built by Brown, under the direction of lady Craven. The lodges, at the eastern and western extremities of the park, were recently built by the margravine. *Lysons's Magna Britannia*, vol. i. *Beauties of England and Wales*, vol. i.

**NEWBURY**, a district of South Carolina; the court-house being 45 miles from Columbia.—Also, a township in York county, Pennsylvania, containing 2014 inhabitants.—Also, a town in Lycoming county, 40 miles from Northumberland.—Also, a post-town and capital of Orange county, in Vermont, pleasantly situated on the W. side of Connecticut river, opposite to Haverhill, in New Hampshire, and five miles distant from it. It contains a gaol, a court-house, and a handsome church for Congregationalists, and 1304 inhabitants; 130 miles N.E. of Bennington.—Also, a township in Essex county, Massachusetts, incorporated in 1635, situated on the S. bank of Merrimack river, and containing 4076 inhabitants. It formerly included Newbury port, and with Merrimack river encircled it. It is divided into five parishes, besides a society of Quakers. The land, particularly on Merrimack river, called "Newbury-Newtown," is of superior quality, and well cultivated. Some few vessels are here employed in the fishery. This township is connected with Salisbury by Essex Merrimack bridge, about two miles above Newbury port, built in 1792.

**NEWBURY Port**, a port of entry, and post-town in Essex county, Massachusetts, pleasantly situated on the S. side of Merrimack river, about three miles from the sea; ranking in a commercial view next to Salem, and containing 5946 inhabitants: incorporated into a township, consisting of 640 acres, in 1764. The churches, which are six in number, are ornamented with steeples: the other public buildings are the court-house, gaol, a bank, and four public school-houses. In this town are ten public schools and three printing houses. Many of the dwelling-houses are elegant. The harbour is safe and capacious, but difficult of access. The business of ship-building is carried on here; and a considerable trade subsists between this place and the West Indies, as well as the Southern States. Some vessels are employed in the freighting business, and a few in the fishery. In 1790 there belonged to this port 6 ships, 45 brigs, 39 schooners, and 28 sloops, amounting in the whole to 11,870 tons. The exports in the year ending September 1794, amounted to 363,380 dollars. A machine for cutting nails has been invented in this town, which will manufacture 200,000 in a day. In this town are a Humane and Marine Society. The light-houses are on Plum island, in N. lat. 42° 47'. W. long. 70° 47'. Newbury port is 40 miles N.N.E. of Boston.

**NEW CALEDONIA.** See **CALEDONIA**.

**NEW CANTON**, a small post-town of America, lately

established in Buckingham county, Virginia, on the S. side of James's river; 70 miles above Richmond.

**NEW CASCO**, a post-town of America, in Cumberland county, Maine; 613 miles N.E. from Washington.

**NEWCASTLE**, a village of the county of Dublin, Ireland, which before the union returned two members to parliament. It is 10 miles S.W. by W. from Dublin.

**NEWCASTLE**, a post-town of the county of Limerick, Ireland, which was originally founded by the Knights Templars, and became a corporation; but has been since reduced, and is now a place of little consequence. It is 114 miles S.W. from Dublin, and 20 S.W. from Limerick. There are some other villages of this name, as one near the river Inny, in the county of Longford, and one in the county of Down, on the Irish sea, but there is no occasion to enlarge.

**NEWCASTLE**, a town of Upper Canada, situated on the Presque' Isle de Quinté, extending into lake Ontario, from the eastern part of the township of Cramahi.—Also, the most northern county of Delaware state, about 40 miles long and 20 broad, containing 25,361 inhabitants, including 1838 slaves. Here are several mills for different purposes. The chief towns are Wilmington and Newcastle.—Also, a post-town and capital of the above county, situated on the W. side of Delaware river; 33 miles S.W. of Philadelphia. It contains more than 150 houses, a court-house, and gaol; a church for Episcopalians, and another for Presbyterians. This town was settled by the Swedes about the year 1627, and they called it "Stockholm." The Dutch had possession of it under the name of "New Amsterdam;" and the English gave it the name of Newcastle. It was incorporated in 1672. N. lat. 39° 38'.—Also, a township in West Chester county, New York, incorporated in 1791.—Also, a town in Rockingham county, New Hampshire, called "Great Island," consisting of about 100 houses and 534 inhabitants in 1790. It is the largest of a number of islands in the mouth of Piscataqua; two miles E. of Portsmouth. It has a meeting-house, and on the N.E. point of the island are the light-house and fort, built in 1795.—Also, a post-town in Lincoln county, Maine, between Damascotte and Skungut rivers; 192 miles N.E. of Boston. The township contains 996 inhabitants.—Also, a post-town of Hanover county, Virginia, at the mouth of the Assequin creek, on the S.W. side of Pamunky river, containing about 36 houses; 54 miles N.W. of Williamsburgh.—Also, a town on the N. coast of the island of Nevis; six miles N.N.E. of Charles-town.

**NEWCASTLE Bay**, a large open bay of the Pacific ocean, on the N.E. coast of New Holland, in which are some small low islands and shoals, S. of York cape.

**NEWCASTLE Island**, a small island in the Florida stream. N. lat. 24° 48'. W. long. 81° 40'.

**NEWCASTLE-upon-Tyne**, a borough and market-town, and a distinct county by itself, is seated on the banks of the river Tyne, within the county of Northumberland, England. Julius Agricola, the general of Vespasian, established a Roman post here about the year 80. Its appellation at this period is uncertain, but in less than half a century afterwards we find it denominated "Pons Ælii," from the bridge built over the river by the emperor Hadrian, when he constructed his celebrated vallum, or wall, which terminated here, and has been traced passing the west door of St. Nicholas church. The rampart formed by Agricola also ran through a part of the town, and not improbably terminated near the site of the castle, which might have been originally a Roman fort. After the evacuation of Britain by that illustrious people, the history of this place



is very little known, though there is no doubt of its having been a town of some importance under the Northumbrian monarchs of the Saxon line. Grey, in his *Chorographia*, says, "the town of Pampendon (now included in Newcastle) is very ancient. I find one of the kings of Northumberland that had a house in it, which we now call Pandon-hall." At the time of the conquest it occurs under the name of Munk-caestre, a designation received from the number of religious foundations which had been erected in it during the heptarchy. In 1080, the castle whence the town has since obtained the appellation of Newcastle was built by Robert Curthose, a younger son of William the Conqueror, on his return from an expedition into Scotland against king Malcolm, in revenge for having afforded protection to Edgar Atheling. This structure, with its necessary appurtenances, occupied an extent of three acres, and was a fortress of great strength, having been defended by a deep fosse, and two massive walls. Only fourteen years after its erection, it was seized by the adherents of earl Mowbray, the last of the ancient line of the earls of Northumberland, who had revolted against William Rufus. That prince, laying close siege to it, however, with a strong force, soon compelled the garrison to surrender. In the time of Henry II. the great tower of the castle underwent considerable repairs. At the same period, also, the fortifications were much strengthened and augmented; and the whole fitted up as a royal residence. John Baliol did homage in the great hall to Edward I. for the crown of Scotland; and David Bruce was long detained a prisoner here, under the charge of John Copeland. Twelve of the ancient Northumbrian barons paid castle-guard rents and cornage to this fortress, being the tenures by which they held their lands. These were abolished, together with the tenure by knights' fees, in the reign of Charles II. From 1605 to 1616, the castle appears to have been in the possession of the worshipful company of tailors, and in 1618 it was granted to Alexander Stevenson, one of the pages to the king, on a lease for fifty years; but this was afterwards purchased by the corporation. Sir John Morley, mayor of the town in 1644, garrisoned this edifice in support of the parliamentary cause, and withstood a very desperate siege against the Scots army, commanded by the earl of Callender and general Levin. Since that time it has gradually fallen to decay. Of the outer wall nothing remains but the principal entrance, called the Black Gate; the inner wall was entirely demolished in 1811. The great tower, a massive square structure, is standing: it is about eighty feet high, and its exterior walls measure near fourteen feet in thickness. There are no fire-places in any part of this edifice, except in a few small rooms, apparently gained out of the walls in later times. The dungeon has been used, for time immemorial, as the county prison during the assizes. A very bold and spacious circular staircase ascends to the summit of the tower, and adjoining, on the east side, is a chapel of most beautiful and curious architecture. The corporation have lately purchased this building, and intend to throw an arched roof over it, and to pull down all the old houses built against it.

In ancient times, the town, as well as the castle, was fortified by a strong wall and ditch. "In the reign of Edward I., a rich citizen of Newcastle was carried off from that town into Scotland, and being at last ransomed, he began to enclose Newcastle with a very firm wall, and the rest of the inhabitants following his example, he finished the undertaking in the reign of Edward III." This wall had seven massive gates, and seventeen round towers, with smaller watch-towers in each interval between them; but all the

gates are now levelled, except two, the "West Gate and New Gate." Leland calls the West Gate "a mightie strong thinge of four wards and an iron gate;" and speaking generally of the wall, he adds, "the strength and magnificens of the wauling of this towne far passeth all the wauls of the cities of England, and most of the townes of Europe." Above the West Gate is the hall of one of the incorporated companies; New Gate is occupied as the town prison.

The rise of Newcastle to eminence as a borough seems to have taken place gradually. William Rufus granted the inhabitants some privileges, which were considerably augmented by Henry I. and John. At this time it was governed by bailiffs only; but in 1251 a mayor was appointed. In 1400 the town was first constituted a county by itself, at which period a sheriff and six aldermen were substituted for the bailiffs. A recorder, eight chamberlains, two coroners, a sword-bearer, a common clerk, and eight sergeants at mace, were added in 1516; and in 1559 the aldermen were increased to ten, and the twenty-four electors constituted a common-council. The powers of justices were conferred on the mayor, the aldermen, and recorder, by queen Elizabeth; and king James I. generally confirmed these, and all the former privileges enjoyed by the corporation. Newcastle sends two members to parliament, who are chosen by the free burgesses resident and not resident, and returned by the sheriff. The number of voters is estimated at 2500.

This town abounded with religious establishments after as well as before the conquest. In 1086 a Benedictine nunnery is mentioned as existing here, in which Agas, the mother-in-law of Malcolm, and Christiana her sister, took the veil subsequent to the death of that prince, and his son, at the siege of the castle of Alnwick. Another nunnery, dedicated to St. Bartholomew, and said to have been founded by Henry III., stood in the field behind the present Nun-gate. At the dissolution it was exceedingly poor, though originally possessed of large estates. The house of the Black friars is still standing; as is also the church belonging to it, in which Edward Baliol alienated to Edward I. the five Scottish counties next adjoining to the borders of England. This house was granted to the mayor and burgesses, who afterwards transferred it to nine of the ancient trades of the town, seven of whom hold their public meetings in it to the present day. The priory of Augustine friars, which stood on the site of the general hospital, owed its origin to William lord Rofs, baron of Wark, about the year 1291. It was of great extent and magnificence, and the usual residence of the kings of England, when passing through Newcastle on their route to Scotland. Here was a priory of Franciscans, or Grey friars, established in 1300 by the family of the Carlills. In this monastery the celebrated Duns Scotus and friar Martin took the order of St. Francis, and resided during many years. In that part of the town called Constable-Garth was a house of brethren de Penitentia Jesu Christi, subsequently granted by Edward III. to the Carmelites, who had their first house on Wall Knoll, where was also an hospital of Trinitarians, founded by William de Acton in 1361. The grammar-school at Westgate was formerly the church of an hospital of St. Mary, founded and endowed in the time of Henry II. Near this spot stood another hospital, also dedicated to the Holy Virgin, which at the suppression maintained a master and six brethren. An hospital of St. Mary Magdalen was situated between Vine-lane and Barras-bridge, where many vestiges of it are yet visible. It was built and endowed by Henry I. for a master, brethren, and sisters, who were bound to receive persons afflicted with the leprosy. King James incorporated this



this hospital, with the chapel of St. Thomas à Becket, on Tyne-bridge, and decreed that the revenues of both should in future be appropriated to the support of a warden, and three poor, and aged, unmarried burgesses; and that the mayor and common-council should act in the capacity of patrons. On Sand-hill was an hospital of St. Catharine, commonly called Thornton's hospital, having been founded by Roger Thornton, in 1403, for a chaplain, who should also be master, nine poor men, and four women. This house is now occupied as a warehouse, and is the property of the mayor and burgesses. Fordun, and some other Scottish historians, assert that there was in this town a monastery of Præmonstratensians, founded by David, king of Scotland. An ancient house in Grindon Chare, traditionally called the chapel of St. John, is supposed to have been their convent. On St. Lawrence's quay are the ruins of a chapel, in honour of St. Lawrence, which was erected by one of the earls of Northumberland; and near Barras-bridge are the remains of another, dedicated to St. James. There was also, before the dissolution, a chapel or oratory in one of the towers of Newcastle-bridge; and in another part of it a hermitage tenanted by a recluse. Close to one end of Tyne-bridge is the chapel of St. Thomas à Becket, the origin of which is unknown, though certainly built before the commencement of the thirteenth century. It has lately been fitted up as a chapel of ease to the church of St. Nicholas.

Newcastle is a town of considerable extent, and contains, according to the population returns of 1811, 3146 houses, and 27,587 inhabitants. The higher parts of it, which are most distant from the river, display a number of wide and respectable streets, but, in the lower parts, the streets and alleys are extremely narrow, dirty, and ill built. The suburbs of Sand-gate and the North-shore are chiefly inhabited by the keelmen, who amount to about seven or eight thousand in number.

The county of Newcastle includes a district of ten miles in circuit, and is entirely independent of Northumberland. Within the town are four parishes, the limits of which were distinctly marked out in 1220. All the churches and chapels are subject to the mother-church of St. Nicholas. This edifice is much admired for the elegant architecture of its tower, which was built in the reign of Henry VI., and rises to the height of 104 feet. The remainder of the structure is of more ancient date, having been erected, in 1359, upon the site of one still older, founded by Osmund, bishop of Sarum, and burnt to the ground in 1216. In the library of this church are several curious manuscripts, and among them a highly illuminated bible, formerly belonging to Hexham abbey. The other parish-churches in Newcastle are St. Andrew's, St. John's, and All Saints: the two first were built in the 13th century, but the last is of modern erection, and may vie with any church in England in respect of interior decoration. Besides these, there are several chapels attached to the establishment. Dissenting meeting-houses are numerous, almost every class of religionists known in the island having one or more places in this town appropriated to public worship. The most frequent are those belonging to Presbyterians in communion with the church of Scotland. The grammar-school, already noticed as occupying the premises of St. Mary's hospital, can rank among its pupils some of the most distinguished characters of this and the last century, several of whom were likewise natives of the town. A charity-school is attached to each of the four churches, and a fifth to the chapel of St. Anne. Sunday-schools are scarcely less numerous than the several places

of public worship: and independent of all these, a large building has been lately erected for the establishment of a school on the Lancastrian plan, where poor children of every sect and denomination may be instructed in reading, writing, and arithmetic. This last is called the Royal Jubilee school, and was built to commemorate his majesty's entry into the fiftieth year of his reign. Nor is the health and support of the poor less attended to in Newcastle than their education. On the west side of the town, and overlooking the river, stands an infirmary, in which nearly twelve hundred diseased individuals are annually restored to health; and in Low Friar-street is a dispensary, established upon the most judicious and liberal principles. A house of recovery for fever patients was erected in 1804. All these charities owe their support to annual subscriptions alone. In an extensive garden, near Westgate, a range of very commodious baths was built by Dr. Hall, some years ago, according to a design furnished by William Cranefon, esq. architect. The Lying-in hospital is situated in Rosemary lane; and there is likewise an institution for the relief of poor women lying-in at their own houses. The other hospitals in this town are the Freeman's hospital, three smaller ones, standing contiguous to it, and the Keelman's hospital, the funds of which are managed under the direction of an act of parliament, passed in 1788. Here is also a spacious asylum for lunatics, belonging to the counties of Newcastle, Durham, and Northumberland.

As the new courts, begun in 1810, are not yet completed, the exchange and town court-house still constitute one large structure, which was built in 1658, and is said to have cost upwards of 10,000*l*. The lower story is occupied by the offices of the town-clerk, the merchant's coffee-house, and a range of piazzas. On the second floor are the guildhall, the mayor's chamber, the merchant's court, the archives of the town, and the revenue-office. In the guildhall are held the assizes, quarter-sessions, and all the other courts of the town and county of Newcastle, except the court of common council, which is held in the mayor's chamber, where may be seen an engine called the branks, formerly employed in the punishment of scolding women. The mansion-house, rebuilt in 1691, is a grand and stately edifice, and fitted up in a handsome style. Here the judges and their attendants are lodged and entertained during the sessions. The assembly-rooms and theatre-royal are both handsome and commodious buildings of modern erection. The old play-house is now occupied as a concert-room; and the old assembly-rooms are appropriated to the use of the Literary and Philosophical Society, which was instituted in 1793, and bids fair to rival the best establishments of a similar kind in the kingdom. On the quay-side, at a short distance from the Exchange, stands the custom-house.

The general appearance of this portion of the town bears a strong resemblance to the port of London, in the circumstances of the river being crowded with a vast fleet of ships of every size and description, and having a bridge thrown over it in a similar position to London-bridge. This structure was built in 1781, to supply the place of a former bridge, which was destroyed by a tremendous swell of the Tyne in 1771, and was found to have been raised on the basis of the Pons Ælii, from the number of Roman coins discovered in the piers. For an account of the borough of Gateshead, on the Durham side of the river, see the article GATESHEAD.

The manufactories of this town are various and important, consisting, however, principally of glass, steel, iron, and rope-works. Broad and narrow woollen cloths are likewise manufactured.



manufactured in considerable quantity for home consumption. The chief exports are coals, lead, glass, iron, salt, bacon, butter and tallow, and the imports include almost every article of foreign or British produce, which convenience or luxury can demand. The collieries in this vicinity are perhaps the most valuable and extensive in Europe, and afford nearly the whole supply of the metropolis, and of those counties on the eastern coast deficient in coal-strata. (See the article COAL.) Most of the glass-houses and roperies belonging to the town stretch along the shore, from the suburbs, for two miles down the river. The chief iron-works are situated at Swalwell, three miles above the town, and at New Greenwich, on the south bank of the river. The markets here are held on Tuesday and Saturday weekly, and the annual fairs on the 12th of August, the 29th of October, and the 22d of November. Of the fairs, the two first continue for nine days each, and the other for one only. Many improvements have lately been effected in the disposition and economy of the markets; which range northwards from the church of St. Nicholas towards Newgate-street. The new butcher-market was erected at the expence of the corporation in 1809.

Besides the historical events already noticed, as connected with the castle, many others of general importance have occurred at this town, some of which may not improperly claim attention, even in an article like the present. A conference for a peace was held here, in 1209, between king John and William king of the Scots, but the two monarchs parted without coming to a reconciliation. The meeting, however, in 1244, between Henry III. and Alexander, was more fortunate in its result. William Wallace, the celebrated champion of Scottish liberty, repeatedly attempted to reduce Newcastle, and was as often repulsed by the resolution of the townsmen. King David attacked it about the year 1340 with no better success, and in 1346 a dreadful action took place, in which the Scots were routed with great slaughter. Henry VI. fled hither after the fatal battle of Towton. Newcastle was the first victim in the grand rebellion, having been seized by the Scottish covenanted, under general Lesley, in the year 1640, a few days subsequent to the defeat of lord Conway at Newburn.

Heaton hall, situated about two miles east from Newcastle, is the seat of the family of the Bidleys; and near it are the ruins of an old building, fortified on the north, and said to have been one of the places of king John's retreat from the fury of his rebellious barons. Walls-End, the Segedunum of the Romans, lies still farther to the east; and derives its present appellation from the circumstance of the great stone barrier erected by Hadrian terminating close to the village. Some remains of the Roman fortrefs appear in a field called the Well or Wall-laws. In sinking the pits of the colliery here, many curious and valuable relics of Roman art were dug up by the workmen. At Benwell, two miles west from Newcastle, was the Condercum of the Notitia, and the station of the Ala Aflorum. A hypocaustum, a very fine urn, (now in Durlam library,) and a variety of inscribed stones and coins, were discovered here at different periods in the last century. Gosforth house, the seat of C. J. Brandling, esq. is a splendid mansion, situated about four miles north from the town. The other seats in this neighbourhood are Stote hall, Eland hall, and Blagdon hall. Ogle castle, the ancient residence of the Ogles, in which David, king of Scots, lay the first night of his captivity, is now in ruins. Not far from hence, adjoining the village of Walton, are the remains of a very remarkable encampment, supposed to be of Danish or Saxon origin.

History and Antiquities of the Town and County of the Town of Newcastle, by John Brand, M. A. two vols. 4to. Beauties of England and Wales, vol. xii. by the Rev. Mr. Hodgson.

NEWCASTLE-under-Line, a borough and market-town in the hundred of Pyrehill, and county of Stafford, England, is situated on a branch of the river Trent, and owes its name and origin to a castle built here by Edmund, earl of Lancaster, in the reign of Henry III. This edifice stood in the centre of a considerable lake, being on the south-west side of the town, but scarcely any vestiges of it now remain. Leland says the whole was destroyed in his time, with the exception of one tower, and that it was originally erected to supply the place of the more ancient fortrefs at Chefferton-under-Line. Hence the appellation Newcastle. This town was incorporated, by royal charter, soon after its foundation; and queen Elizabeth and Charles II. severally confirmed its privileges. It is now governed by a mayor, two justices, two bailiffs, and twenty-four common-councilmen, who have the right of holding courts for the recovery of debts under forty pounds. Newcastle sends two members to parliament, and has done so since the twenty-seventh year of the reign of Edward III. The right of election has been much disputed, but was declared, in 1792, to be vested "in the *freemen* residing in the borough of Newcastle-under-Line."

The situation of the town is extremely pleasant, and the houses display a superior neatness in their architecture, as well as a more than ordinary degree of uniformity in their arrangement. The principal street in particular is spacious and well paved, but its appearance is somewhat injured by the market-place occupying its centre. It is said there were anciently four churches in this town, though one only now exists, and this is denominated a chapelry to Stoke. Dissenting meeting-houses, however, are numerous. The alms-houses, twenty in number, owe their erection to the marquis of Stafford and lord Grenville, and are appropriated for the accommodation of twenty poor women, inhabitants of the borough. A manufactory of hats, the coal and cloathing trade, and the potteries in the vicinity, form the chief support both of the higher and lower orders of the inhabitants. The market-day is on Monday, weekly, for provisions; and every alternate week a great cattle market is held. According to the parliamentary returns of 1811, this town contained 1344 houses, and 6175 inhabitants, shewing an increase, since 1801, of 286 houses, and 1571 persons.

As the grand Trunk canal, which directly connects the navigation of the Trent, the Mersey, the Severn, and the Thames, with, collaterally, almost every trading town in the interior, passes close to Newcastle, its position must be regarded as extremely favourable to trade and manufactures. Its vicinity, moreover, abounds with coal, and contains an exhaustless store of several kinds of clay, admirably adapted for the manufacture of various sorts of earthen-ware; and accordingly here are situated the most extensive and valuable "potteries" in Great Britain. The district comprehended under this title is somewhat above eight miles in length, and nearly as many in breadth, including within its compass several thriving market-towns and villages, which entirely owe their rise and prosperity to this branch of industry. (See POTTERY.) The principal coal mines lie to the north of Newcastle, and their produce is conveyed hither by a canal formed by sir Nigel Gresley, under an act of parliament dated in 1775. Etruria, the superb mansion of the celebrated Josias Wedgewood, esq. stands about



two miles north from the town; and nearly at the same distance, but more to the east, is the village of Shelton, the birth-place of Elijah Fenton, a distinguished poet of the last century. Chesterton-under-Line, the site of the ancient fortress, the decay of which gave occasion to the erection of that at Newcastle, is now a trifling village, but there can be no doubt of its having been a place of importance previous to the event we have just mentioned. Scarcely any traces either of the castle or town can now be discovered, but Camden tells us he saw their ruins and shattered walls; and Erdeswick says, he could perceive the walls had been of wonderful thickness and strength. In the reign of king John, the property of the manor here, and consequently the custody of the castle, were vested by that monarch in Randal, one of the earls of Chester, from whom it most probably took its present name, for we conceive it very likely that it had a different appellation at a more remote period.

At Trentham, three miles and a half from Newcastle, on the south bank of the river, is a magnificent seat, belonging to the marquis of Stafford. The house is a modern erection, built after the model of the Queen's palace in St. James's Park, and is surrounded by extensive inclosures finely variegated by umbrageous foliage, swelling lawns, and expansive sheets of water, formed by the Trent, which flows through the park. The noble owner of Trentham is justly eminent in the annals of the fine arts for his large collection of pictures, which is partly preserved in this mansion, and partly in the town-house at St. James's, London. At an extremity of Trentham-park, bordering on the public road, is a family mausoleum, lately erected from the classical designs of J. H. Tatham, esq. architect. Some further particulars of this splendid seat, and of others in the vicinity, will be given in a subsequent account of the town of Stone. In the village of Trentham stood an ancient nunnery, where St. Werburgh, the sister of king Ethelred, was abbess at the time of her death, A.D. 683. This monastery, having fallen to decay, was restored by Randal, second earl of Chester, in the reign of Henry I. and filled with canons of the order of St. Augustine. After its renewal it was dedicated to the Virgin Mary, and All Saints, and at the period of the dissolution had seven religious inmates, and possessed endowments to the amount of 121*l.* 3*s.* 2*d.* per annum. The petty sessions for the northern division of the hundred of Pyrehill are held here. *Beauties of England and Wales*, vol. xiii. by the Rev. Joseph Nightingale. See also Carlisle's *Topographical Dictionary of England*, 2 vols. 4to. Tanner's *Notitia*, and *The Topographer*, 4 vols. 8vo.

NEWCASTLE-in-Emlyn, a small market-town, is situated partly in the hundred of Elfed, and county of Caermarthen, and partly in the hundred of Treed-yr-Aur, in the county of Cardigan, South Wales. It is pleasantly stationed on the banks of the river Teivi, which meanders along the vale here in a very bold and serpentine course, and adds greatly, by its majestic sweeps, to the charms of the surrounding scenery. The approach to the town lies through an arched gateway, about fourteen feet high, and supported by two octagon pillars, which contributes also to enhance the romantic and picturesque view beyond it. Here are the ruins of a castle originally founded at a very remote period, and subsequently rebuilt by sir Rhys ap Thomas, who made it one of his principal seats. Some coins and other vestiges of a Roman station are said to have been discovered in this vicinity, and the country around exhibits several encampments of different forms and sizes, some of

which were doubtless either constructed or altered by the Romans. The market day in this town is Saturday of every week, and there are six fairs during the year. Carlisle's *Topographical Dictionary of Wales*, 2 vols. 4to. See also Evans's *Tour in Wales*.

NEW CHESTER, a township of America, in Grafton county, New Hampshire, on the W. side of Pemigewasset river, incorporated in 1778; 13 miles below Plymouth.

NEWCOME, WILLIAM, in *Biography*, a learned Irish prelate, was the second son of the Rev. Joseph Newcome, who enjoyed preferment in England, as well in the county of Bedfordshire as in Berkshire. The subject of this article was born at Barton-le-Clay, in Bedfordshire, on the 10th of April, 1729, O. S. He was educated at the grammar-school at Abingdon, and became greatly distinguished among his contemporaries. In 1745 he was elected to a scholarship of Pembroke college, in the university of Oxford: here he took his degrees with much reputation, and being intended for the clerical profession, he paid every attention in his power to those studies that would enable him to sustain the sacred character of a Christian minister with respectability and real dignity. After this he became fellow and tutor of Hertford college, and among other pupils placed under his care were lord Henry Seymour and the late right hon. Charles James Fox (see his article, vol. xv.), who always cherished a warm respect for his person and memory. It was at Hertford college that he met with an accident which occasioned the loss of his left arm. In the year 1765 he took his degree of D.D., and was appointed chaplain to the earl of Hertford, then lord lieutenant of Ireland; and in the following year he was nominated to the see of Dromore. In this situation he continued about nine years, discharging, with great assiduity, the duties of the episcopal office, and by his affability, prudence, and moderation, securing the respect of all parties, and of all religious persuasions. Shortly after he had obtained this bishopric he married an English lady, by whom he had a daughter, and on the death of this lady, in a few years, he married a second time, and had several children. In the year 1775, Dr. Newcome was translated from Dromore to the bishopric of Ossory, and from this period he began to arrange the papers that he had composed, as the foundation of several learned works, which he afterwards gave to the world. The first of these publications was entitled "An Harmony of the Gospels, in which the original Text is disposed after Le Clerc's general manner; with such various Readings as have received Wetstein's Sanction, &c." To this work his lordship subjoined observations to settle the time and place of every transaction, to establish the series of facts, and to reconcile seeming inconsistencies. The bishop adopts the notion that our Lord's ministry was of more than three years and a half duration, and with this view he divides his Harmony into seven parts. 1. The history before the public ministry of Christ, including thirty and a half years. 2. The transactions of about six months, from Jesus's baptism till the beginning of the ensuing passover. 3. The transactions of twelve months, from the beginning of the first passover. 4. The transactions of another twelve months, from the beginning of the second passover. 5. The transactions of a third twelve months, from the beginning of the third passover. 6. The transactions of three days, from the day on which the fourth passover was killed, to the end of the day before the resurrection. And 7. The transactions of forty days, from the day of the resurrection to the ascension. See the article PRIESTLEY, in which a different theory and arrangement will be given.

Dr.



Dr. Newcome, in the year 1779, was translated to the see of Waterford, and in the following year he entered into a vindication of the work just spoken of, in a tract entitled "The Duration of our Lord's Ministry particularly considered," which was replied to by Dr. Priestley; and Dr. Newcome published a second tract on the same subject. In the year 1782, he published "Observations on our Lord's Conduct as a Divine Instructor, and on the Excellence of his Moral Character." Three years after this, he rendered an acceptable service to biblical scholars, in a thin quarto, entitled "An Attempt towards an improved Version, a metrical Arrangement, and an Explanation of the Twelve Minor Prophets." "One design," says his lordship, "of engaging in the present arduous province, was to recommend, and, in a small degree, to facilitate, an improved English version of the Scriptures; than which nothing can be more beneficial to the cause of religion, or more honourable to the reign and age in which it was patronized and executed. The reasons for its expediency are, the mistakes, imperfections, and many invincible obscurities of our present version; the accession of various helps since the execution of that work; the advanced state of learning, and our emancipation from slavery to the Masoretic points, and to the Hebrew text as absolutely uncorrupt." His lordship gives a series of fifteen rules for the conduct of such a work, which are allowed by all competent judges to be extremely valuable and important. In the year 1788, the bishop published "An Attempt towards an improved Version, a metrical Arrangement, and an Explanation of the Prophet Ezekiel." In a very admirable preface to this work, and on other occasions, bishop Newcome recommends most earnestly the cultivation of the Hebrew language, on account of the vast importance of the treasures which it unfolds. "The venerable books written in Hebrew are indeed highly curious and instructive, apart from religious considerations. The historian, the geographer, the chronologer, the antiquarian, the naturalist, the poet, the orator, the legislator, the observer of human nature in its original simplicity, of the sources whence nations sprang, of society in its earliest stage, and of ancient Eastern manners in their only genuine representation; will here find their researches amply rewarded, no less than the divine who raises his eye to the adorable ways of Providence in the religious and civil history of mankind." And the worthy prelate adds, that "Such a vein of Hebraism runs through the writings of the Old Testament, that even these divine oracles cannot be accurately understood, nor the anomalies of their style explained, without some knowledge of Hebrew literature." Another important work given to the public by our learned prelate, was entitled "An historical View of the English biblical Translations; the Expediency of revising, by Authority, our present Translation; and the Means of executing such a Revision." In January 1795, Dr. Newcome was translated to the archiepiscopal see of Armagh; and in this new situation he maintained the same character which had rendered him the object of universal respect and esteem at Dromore, Ossory, and Waterford, though he was obliged to assume greater state in his manner of living and appearance, and to mix more in public life, than was agreeable to his wishes, but he conducted himself in those scenes with the same propriety which governed him in all his intercourse with the world, rejoicing when he was enabled to withdraw from them to the enjoyment of domestic happiness and the pursuit of his studies. Shortly after his elevation to the archbishopric, he published "A Charge," in which he calls the attention of the clergy to a very important, and at that

time much neglected, part of the pastoral care, that of occasional and private instruction, pointing out the manner of communicating instruction to different descriptions of persons. This charge was the last publication of Dr. Newcome, who, to the regret of all that knew him, or were acquainted with his works, died at Dublin on the 11th of January, 1800, in the 71st year of his age. Soon after the archbishop's death was published his "Attempt towards revising our English Translation of the Greek Scriptures, or the New Covenant of Jesus Christ, &c." This work, which was printed in 1796, and reserved by the author for publication after his death, has been made the basis of an "Improved Version of the New Testament, published by a Society for the Promotion of Christian Knowledge, &c." much to the mortification, as we have heard, of some of the archbishop's relatives. The archbishop had employed a considerable portion of his time on an "Attempt towards revising our English Translation of the Hebrew Scriptures," and he bequeathed his interleaved Bible, in four volumes folio, containing the result of his labours, to the library at Lambeth-palace. We understand from the article in the General Biography, to which we have been greatly indebted for the foregoing facts, that there exists somewhere in MS. a memoir of the archbishop drawn up by himself, and in his own hand-writing, in which he gives an interesting account of the progress of his studies, and of the sentiments relative to the characters and opinions which have occasioned much discussion in the theological world.

NEWCOMEN, MATTHEW, a nonconformist divine, who was ejected from the living of Dedham in Essex in 1662, was of St. John's college, Cambridge, where he took his degree of M. A. He was likewise a member of the Westminster assembly of divines, and had some concern in drawing up their catechism. Mr. Newcomen was one of the five persons who wrote "Smectymnus," which was a treatise against bishop Hall's Vindication of Episcopacy. The title of the work was made up of the initials of the christian and furnames of the several authors, viz. Stephen Marshal, Edmund Calamy, Thomas Young, Matthew Newcomen, and William Spurstow. After Newcomen was ejected for his adherence to conscience, he went to Leyden, where he died, in 1666.

NEW CORBUDA, in *Geography*, a town of the province of Tucuman, in South America.

NEW DUBLIN, a township in the county of Lunenburg, Nova Scotia, on Mahone bay, first settled by Irish and afterwards by Germans.

NEW EDINBURGH, a new settlement in Nova Scotia. NEWKLOW, a town of Bohemia, in the circle of Beraun; 17 miles S.E. of Beraun.

NEWEL, in *Architecture*, the upright post which stairs turn about; being that part of the staircase which sustains the steps.

The newel is, properly, a cylinder of stone, which bears on the ground, and is formed by the ends of the steps of the winding-stairs.

There are also newels of wood, which are pieces of timber placed perpendicularly, receiving the tenons of the steps of wooden stairs into their mortises, and wherein are fitted the shafts and rests of the staircase, and the flights of each story.

NEWELL, in *Geography*, a town of Lithuania, in the palatinate of Brzesc; 24 miles S.W. of Pinsk.

NEW ENGLAND. See *New ENGLAND*.

NEWENHAM, CAPE, the north point of Bristol bay, on the N.W. coast of North America. N. lat. 58° 42'. W. long. 162° 24'.

NEWENT,



**NEWENT**, a small market-town in the hundred of Botloe, and county of Gloucester, England, is situated nine miles from the city of Gloucester, and 108 miles from London. Its original appellation, according to Leland, was *New Inn*; from a building erected for the accommodation of travellers, when the communication was first opened by this road into Wales. The town is irregularly built, and is but of little importance; though formerly it was much larger, and had the privileges of a borough; it was also governed by a bailiff, whose office appears to have fallen into disuse about the end of the 17th century. A house, now dilapidated, still bears the name of the Booth-hall. The church is a spacious structure, of the architecture of various periods; as it appears to have been three times partially rebuilt. Over the porch is a tower, terminating in a lofty spire, erected, with the roof of the nave, about the year 1675: the latter is supported by screws without pillars, in a manner similar to that of the theatre in Oxford. The population returns of the year 1811 state the inhabitants of Newent as amounting to 2538, the number of houses to 511. Four fairs are annually held here, and a weekly market on Fridays. The town and its vicinity were distinguished by many military transactions during the civil wars. The parish, which includes a circumference of nearly twenty-five miles, produces great quantities of coal: two pits have been recently sunk by subscription; the thickness of the seam is between four and five feet; the depth to the coal about forty-one yards.

An alien priory was founded in this town, soon after the Norman invasion, by Roger de Montgomery; at whose request it was subjected by the Conqueror to the Benedictine abbey of Corneille in Normandy. King Henry IV. granted its possessions to the collegiate church of Fotheringhay in Northamptonshire, to which they continued annexed till the dissolution. On the site of this priory the court-house was built: an ancient gateway, and some smaller fragments of the monastic building, yet remain. Rudge's History of the County of Gloucester, 2 vols. 8vo. 1803. Beauties of England and Wales, vol. v.

**NEWERT**, a small island in the North sea, near the E. coast of Lewis. N. lat. 58°. W. long. 6° 22'.

**NEW-FANE**, the chief town of Windham county, in Vermont, America, situated on the West river; 12 miles N.W. of Brattleborough, containing 1000 inhabitants.

**NEW FOREST**. See **FOREST**.

**NEWFOUNDLAND**, an island in the Atlantic ocean, separated from the continent of America by the straits of Belleisle, about 21 miles wide, and the gulf of St. Lawrence, about 320 miles in length and breadth, approaching to the shape of a triangle, and situated between N. lat. 46° 40' and 51° 30', and W. long. 52° 31' and 59° 40'. This island is rather hilly than mountainous. The soil is rocky and barren. The coasts are subject to fogs, supposed by some to be owing to the superior warmth of the gulf stream from the West Indies, and also to snow and sleet; and the interior parts, which have not been penetrated above 30 miles, abound with ponds and morasses. It is watered, however, by several rivers, and has many large and good harbours; and it furnishes a supply of birch, small pine, and fir, which may probably, with due attention, be of service for masts, yards, and lumber of all sorts for the West India trade; but the chief mine of its wealth is the fishery on its banks, which is computed to employ annually 3000 sail of small craft, and 100,000 persons, and to yield about 300,000*l.* a-year, from the cod sold in Catholic countries. For an account of its fishery, see the article **FISHERY**. The chief towns of this island are, St. John in the S.E., Placentia

in the S., and Bonavista in the E.; but not above 1000 families remain here during the winter. In the spring a small squadron is sent to protect the fisheries and settlements, the admiral being also governor of the island, as its sole importance depends upon the fishery; and there are two lieutenant-governors, one at St. John's and another at Placentia.

This island was discovered by John Cabot in 1497; but the French seem to have first availed themselves of the gold mine of the Newfoundland fishery, in which they were actually engaged in the year 1534. In 1583, sir Humphrey Gilbert, brother-in-law to Raleigh, made an attempt to settle this important colony; but he was obliged to return without effecting his purpose, and he was swallowed up by the ocean in his voyage homewards, retaining to the last his love of improvement and his piety; for whilst in the midst of danger he was sitting unmoved in the stern of his ship, with a book in his hand, he was frequently heard to say to his comrades, "Courage, my lads, we are as near heaven at sea as on land." After several subsequent efforts for making a settlement in this island, and disputes with the French, who had possession of Placentia, and a principal part of the island, it was ceded to England by the treaty of Utrecht in 1713, the French being allowed to dry their nets on the northern shores; and by a treaty in 1763, they were permitted to fish, under certain limitations, in the gulf of St. Lawrence; and the small isles of St. Pierre and Miquelon were ceded to them. For further particulars, see *Cod FISHERY*.

**NEW FOUND MILLS**, a place of America, with a post-office, in Hanover county, Virginia; 112 miles from Washington.

**NEW GARDEN**, a post-town of America, in Chester county, Pennsylvania.—Also, a settlement of the Friends, in Guilford county, North Carolina.

**NEW GENEVA**, a post-town of America, in Fayette county, Pennsylvania, on the S. side of the Monongahela, in which is a manufactory of glass bottles and muskets. In its vicinity is found plenty of iron ore and coal. Here is a post-office, 230 miles from Washington.

**NEW GERMAN TOWN**, a post-town of America, in Hunterdon county, New Jersey; 48 miles N.W. of Brunswick.

**NEW GLOUCESTER**, a small post-town of America, in Cumberland county, Maine; 146 miles N. of Boston; incorporated in 1774, and containing 1378 inhabitants.

**NEW GOTTINGEN**, a town of America, in Burke county, Georgia, on the W. bank of Savannah river; about 18 miles E. of Waynesborough.

**NEW GRANADA**. See *New GRANADA*.

**NEW GRANTHAM**, a township of America, in Cheshire county, New Hampshire, incorporated in 1761; about 15 miles S.E. of Dartmouth college.

**NEW HAMPSHIRE**, one of the United States of America, extending 168 miles in length, 90 in its greatest, and 19 in its least breadth, between 42° 41' and 45° 30' N. lat., and 2° 41' and 4° 29' E. long. from Philadelphia; bounded N. by the province of Lower Canada, E. by the district of Maine and the Atlantic ocean, S. by Massachusetts, W. by the western bank of Connecticut river, and containing 9491 square miles, or 6,074,240 acres, of which at least 100,000 acres are water. This state is divided into six counties, which are subdivided into 214 townships and locations, most of which are about six miles square. The names of these counties, their chief towns, and number of inhabitants, in 1800, were as follow:

Counties,



Counties.	Townships.	Inhabitants.	Chief Towns.	N. lat. 43° 5'	No. of Inhabitants.
Rockingham	46	45,427	Portsmouth. Exeter Concord	- - -	5339 2052 2062
Strafford	25	32,614	Dover Durham	- - -	1126
Hillsborough	{ 37 and 3 locations }	43,899	Amherst	- - -	2150
Cheshire	35	38,825	Keene Charleston	- - -	1645 1364
Grafton	{ 50 and 17 locations }	23,093			
Coos	26		Lancaster	- - -	440
Total	219	183,858			

The principal harbour for ships in this state, which has but about 18 miles of sea-coast at its S.E. corner, is the entrance of Piscataqua river. The more remarkable high lands do not appear nearer to the sea than about 20 or 30 miles. The first ridge is denominated the Blue Hills, which pass through Rochester, Barrington, and Nottingham, beyond which are several higher detached mountains. The third ridge consists of higher mountains, of which the principal are Chocorua, Ossipy, and Kyafarge. Beyond these is the lofty ridge which divides the branches of Connecticut and Merrimack rivers, denominated the height of land. In this ridge is the celebrated Monadnock mountain; and 30 miles N. of this is Sunapee; and 48 miles farther is Moosehillock mountain. This ridge is then continued northerly, dividing the waters of the river Connecticut from those of Saco and Ameriscoggin. Here the mountains rise much higher, the most elevated summits of which are the White mountains. The lands west of this ridge, bordering on Connecticut river, are interspersed with extensive meadows or intervals, rich and well watered. Five of the largest streams in New England receive more or less of their waters from this state; these are Connecticut, Ameriscoggin, Saco, Merrimack, and Piscataqua rivers. The principal lakes in this state are, Winnipiscogee, Umbagog, Squam, Sunapee, Great Ossipy, and Massabesick pond. The soil in New Hampshire is very various; the most valuable is that which lies contiguous to the larger rivers, because it is annually overflowed, and thus enriched: lands of this kind yield wheat, and other kinds of grain, in the greatest perfection; but they are not so good for pasture as the uplands of a proper quality; apples and pears are the most common, and the principal fruits cultivated in this state. The chief business of the inhabitants is agriculture. Beef, pork, mutton, poultry, wheat, rye, Indian corn, barley, pulse, butter, cheese, flax, hemp, hops, esculent plants, and roots, may be produced in great abundance in New Hampshire. The principal articles of export from this state are pine-boards, oak-plank, staves and heading, clap-boards, shingles, hoops, oars, rafters, pine and oak timber, masts, spars, shoo-hogheads, fish dried and pickled, whale-oil, tar, flax-seed, beef, corn, oxen and cows, horses, sheep, New England rum, bricks, pot and pearl-ashes, &c. The total value of exportation for the years 1798 and 1799 was 723,242 dollars. The imports consist of West India rum, gin, molasses, wine, porter, sugars, tea, coffee, cotton, cheese, nails, cordage, twine, salt, sea-coal, steel, lead, and grind-stones. The amount of shipping belonging to New Hampshire in 1798 was 19,220 tons. The people in this country generally manufacture their own clothing, and considerable quantities of tow-cloth for exportation. The other manufactures

are pot and pearl-ashes, maple sugar, bricks and pottery, and some iron.

By an act of assembly in 1792, a bank, under the style of the "Bank of New Hampshire," was established at Portsmouth, to continue 50 years, under the management of a president and seven directors. The number of inhabitants in the year 1800 was 183,858, and it appears that the number has actually been doubled in less than 19 years; and of these inhabitants several instances occur of remarkable longevity. The people of this state are, in general, hardy, robust, active, and brave; but it is a subject of regret, that the free indulgence of spirituous liquors is one of their greatest faults, particularly in the vicinity of Piscataqua river, and its branches. Since the revolution, the means of information and improvement have been augmented and extended. The only college in this state is in the township of Hanover, called "Dartmouth College," (see COLLEGE); besides which there are many academies.

The largest town in New Hampshire is *Portsmouth*, which see: besides which we mention, in their proper places, the towns of Exeter, Concord, Haverhill, Charleston, Keene, Dover, Amherst, and Plymouth. The principal denominations of Christians in this state are Congregationalists, Presbyterians, Episcopalians, Baptists, and Quakers: here are also a few Sandemanians and Universalists. The constitution of this state is similar to that of Massachusetts. The first discovery of any part of New Hampshire was in 1614; and the first settlement was made in 1623. See Morfe's Geog.

NEW HAMPTON, a post-town of America, in New Hampshire, Strafford county, on the W. side of lake Winnipiscogee, nine miles S.E. of Plymouth, incorporated in 1777.—Also, a post-town in Hunterdon county, New Jersey, 217 miles from Washington.

NEW HANOVER, a maritime county of Wilmington district, North Carolina, extending from cape Fear river N.E. along the Atlantic ocean. The chief town is Wilmington.—Also, a township in Burlington county, New Jersey, containing about 20,000 acres of improved land, and a large quantity that is barren and uncultivated. The compact part is called "New-mills," containing about 50 houses; 27 miles from Philadelphia.—Also, a township in Morgan county, Pennsylvania.—Also, a county of North Carolina, in the district of Wilmington, containing 5371 inhabitants, of whom 2933 are slaves. See also HANOVER.

NEW HARTFORD, a small post-town in Litchfield county, Connecticut; 14 miles N.E. of Litchfield.

NEW HAVEN, called also *Mecching*, a town of England, in the county of Suffex, situated on the English channel, having a small, but convenient, harbour, at the mouth of



of the river Ouse; guarded at the entrance by a small fort; seven miles S. of Lewes. N. lat.  $50^{\circ} 47'$ . E. long.  $0^{\circ} 4'$ . —Also, a county of Connecticut, in America, extending along the Sound between Middlesex county on the E. and Fairfield on the W.; about 50 miles long from N. to S. and 28 from E. to W.; divided into 14 townships, and containing, in the year 1800, 31,926 free persons, and 256 slaves. —Also, a city, the seat of justice in the last-mentioned county, and the semi-metropolis of the state. This city lies round the head of a bay, which makes up about four miles N. from Long Island Sound; and covers a large plain, which is enclosed on three sides by high hills or mountains. Two small rivers bound the city E. and W. It was originally laid out in squares, many of which have been divided by cross streets; four streets run N.W. and S.E., and are crossed by others at right angles; near the centre is the public square, in and about which are the public buildings, which are a state-house, three college edifices, a chapel and edifice for the library, &c. three churches for Congregationalists, and one for Episcopalians. The public square is encircled with rows of trees, which render it both convenient and delightful. Many of the streets are also ornamented with rows of trees, giving to the city a rural appearance. The city contains between 3 and 400 neat houses, chiefly of wood. Within the limits of the city there were, in 1798, 547 houses, and upwards of 4000 persons, of whom about one in seventy dies annually. As to pleasantries and salubrity, New Haven is hardly exceeded by any city in America. It carries on a considerable trade with New York and the West India islands. The exports for one year, ending Sept. 1794, amounted in value to 171,868 dollars. Here are manufactures of card-teeth, linen, buttons, cotton and paper. For an account of Yale college in this city, see COLLEGE. This place and Hartford are the seats of the legislature alternately; 40 miles S.W. by S. of Hartford, 152 from Boston, and 183 N.E. of Philadelphia. N. lat.  $41^{\circ} 18'$ . W. long.  $72^{\circ} 56'$ . —Also, a post-town in Addison county, Vermont, on Otter creek, between Middlebury and Vergennes.

NEW HEBRIDES. See HEBRIDES.

NEWHOFF, THEODORE BARON, in *Biography*, commonly entitled *King of Corsica*, the son of Anthony baron de Newhoff, and de Stein, in Westphalia, was born at Metz, about the year 1696. His father, by his marriage with the daughter of a merchant, having incurred the hatred of his relations, was obliged to emigrate into France, and died while the son was very young. The dukes of Orleans, to whom the baron had been introduced, took compassion of the desolate state of Theodore, and his fatherless sister, sent for them, and caused them to be brought to court. While a youth, Theodore obtained the appointment of page to the duke regent, and his sister, who became maid of honour to her highness, was afterwards married to the count de Trevoux. The boy manifested at an early period a passionate attachment to military glory; the lives of the illustrious Romans and Greeks, as recorded by Plutarch, were the subjects of his constant study; he read them till his heart was inspired with an ambition to imitate their heroic deeds. The romantic exploits of Charles XII. of Sweden had filled Europe with the praises of that monarch, and became the principal subject of conversation at this period. Young Newhoff, burning to participate in the glory of this prince, left France, entered into the service of Charles, and soon acquired a considerable share of knowledge in the art of war, and at all times exhibited that indifference for existence which was the characteristic of the hero whom he wished to emulate. He also distinguished himself by his genius and capacity for public affairs, which introduced him to the notice of baron de Gortz, who directed all the political concerns of the

Swedish cabinet. By that minister he was employed in several difficult negotiations, and acquitted himself to his entire satisfaction. When that statesman was executed at Stockholm, Theodore Newhoff entered into the Spanish service. Soon after this he married an Irish lady of some rank, who, in consequence of the misfortunes of her family, had taken refuge in a foreign country. This was lady Sarsfield, daughter of lord Kilmallock, and lady of honour to the queen, by whom he had a son, who was afterwards known in this country by the name of colonel Frederic, who obtained military rank as colonel, from the duke of Wirtemberg, and who, being reduced to great distress, put an end to his life, in the portal of Westminster abbey, in the year 1796. This gentleman was known in the literary world by "*Mémoires pour servir à l'Histoire de Corse*" and by a "*Description of Corsica, with an Account of its Union to the Crown of England*." (See Monthly Magazine, vol. iii.) But to return to Theodore; he now repaired to France, and became connected with John Law, the famous Scotch adventurer, with whom he embarked in the memorable Mississippi scheme, which was afterwards productive of so much wretchedness to thousands. From thence he passed into Holland and England, and in 1736 we find him at Leghorn. It was during his residence in Florence that his connection with his future subjects commenced. Corsica being, at that time, in a state of insurrection, Theodore went to that island, where the inhabitants chose him for their king. He instituted a new military order, called "*The Order of Deliverance*," but he was, after a time, obliged to quit the island, having first appointed deputies to manage affairs in his absence. He went to Naples in disguise, but was discovered and made prisoner in the fortresses of Ceuta; at length he escaped to England, where he died. See our article *CORSICA*; also a work entitled "*Necrology*," published in London in 1800.

NEW HOLLAND, in *Geography*. See HOLLAND.

NEW HOLLAND, a post-town of America, in Lancaster county, Pennsylvania, in the midst of a fertile country; containing a German church and about 100 houses; 54 miles W.N.W. of Philadelphia.

NEW JERSEY. See *NEW JERSEY*.

NEWIN. See NEVIN.

NEWINGTON, in *Geography*, a township of America, formerly part of Portsmouth and Dover, in Rockingham county, New Hampshire, containing 481 inhabitants.

NEWINGTON-Butts, a large village, and a parish, situated in the eastern division of the hundred of Brixton, and county of Surrey, at the distance of somewhat more than a mile to the south of London-bridge. The parish is of very small extent, consisting only of about three hundred acres, of which a third is covered with houses, and the remainder laid out in gardens and pasturage. It is bounded on the west by the parish of Lambeth; on the east and north by that of St. George, Southwark; and on the south by Camberwell. The church, which is a brick building in the modern style, though much enlarged within these few years, is still by far too confined for the population. The living is a rectory in the peculiar jurisdiction of the archbishop of Canterbury. In East-lane, Walworth, are two meeting-houses of the Baptists; and in West-lane is one belonging to the Independents, who have also another in Lock's Fields. Near the Elephant and Castle stands a conventicle, on the front of which is inscribed, in large letters, "*The House of God*." The congregation which assemble here only differ from the established church in the circumstance of their entertaining a confident belief that the world is nigh dissolution. In this parish are "*The Draper's Alms-houses*," founded and endowed by Mr. John Walter in the year 1651. Newington was originally spelt Neweton, and afterwards Newenton. It



occurs first as Newington-Butts in a record dated 1558, when there can be no doubt but that "butts" were placed here for archers to shoot at. According to the parliamentary returns of 1811, this parish contains 4994 houses, and 23,853 inhabitants. By the returns of 1801, the former were only estimated at 2940, and the latter at 14,847, so that the population has increased more than a third of its total amount within the last ten years. Lysons's *Environs of London*, vol. i. 4to. edit. 1795; with "Supplement," published in 1811.

NEWINGTON, *Stoke*, a parish and village in the hundred of Ossulton, and county of Middlesex, England, is situated at a short distance N.E. of Islington. The parish is bounded by those of Hackney, Islington, Hornsey, and Tottenham, and contains, exclusive of the ground covered with houses, about 500 acres of land, chiefly laid down in pasture. The manor has, from time immemorial, been attached to a prebend in St. Paul's cathedral. Thomas Sutton, esq. who occasionally resided at the manor-house, which he held on a lease of 99 years, founded the charter-house in this village. The church is a low, ancient edifice, containing a great variety of monuments and inscriptions, but none of them seem entitled to particular notice. Here is a charity school, established before the year 1729, and supported partly by endowments, and partly by voluntary contributions and collections at charity sermons. Twenty boys and fifteen girls are clothed and educated in this school, besides which, there is one belonging to the Dissenters, where fourteen girls receive their clothes and education. Newington possesses two dissenting meeting-houses of great respectability, one being at Newington Green. The distinguished and much lamented Dr. Price was long pastor of the latter.

In the parliamentary returns of 1801, the number of houses in this parish were estimated at 221, and the inhabitants at 1462 in number, but by the late returns (1811) it appears to contain 364 houses, and a population of 2149 persons. Lysons's *Environs of London*, vol. iii. 4to. edit. 1795, with "Supplement," 1 vol. 4to. 1811.

NEW INLET, a channel of the Atlantic, between cape Fear island and the coast of North Carolina. N. lat.  $33^{\circ} 56'$ . W. long.  $78^{\circ} 5'$ .—Also, a channel between two small islands on the coast of New Jersey. N. lat.  $39^{\circ} 50'$ . W. long.  $74^{\circ} 15'$ .

NEW INVERNESS. See *New Inverness*.

NEW IPSWICH. See *New Ipswich*.

NEW ISLAND, an island near the southern extremity of South America; 21 miles N.E. of Evout's islands.

NEW KENT, a county of Virginia, bounded on the S. side of Pamunky and York rivers, about 33 miles long, and 12 broad, containing 2741 free inhabitants, and 3622 slaves; the court-house is 30 miles from Richmond, and has a post-office.

NEWLAND, PETER, in *Biography*, the son of a carpenter at Dimmermeer, near Amsterdam, was born in 1764. In his childhood he evinced extraordinary proofs of genius, and at the age of ten years produced some excellent pieces of poetry, and was, even then, able to solve problems in mathematics without having had any instruction from a master. The Batavian government appointed him one of the commissioners of longitude, and he was successively professor of mathematics and philosophy at Utrecht and Amsterdam. He died in the year 1794. He was author of several works, among which may be mentioned the following; 1. *Poems in the Dutch Language*; 2. *A Tract on the Means of enlightening a People*; 3. *On the general Utility of the Mathematics*; 4. *Of the System of Lavoisier*; and 5. *A Treatise on Navigation*. To these may be added treatises on the form of the globe; on the course of Comets, and the uncertainty of their return; and on the method of ascertaining the latitude at sea.

NEWLAND, in *Geography*, a small island of England, near the N.W. coast of the county of Cornwall, at the mouth of the river Alan; four miles below Padstow.

NEW LEBANON. See *New Lebanon*.—Also, a post-town of Camden county, North Carolina; 279 miles from Washington.

NEWLIN, a township of America, in Chester county, Pennsylvania, on the Brandywine.

NEW LONDON, a maritime county of Connecticut, comprehending the S.E. corner of it, bordering E. on Rhode island, and S. on Long Island sound, about 30 miles from E. to W. and 24 from N. to S.; it is divided into 11 townships, of which New London and Norwich are the chief, and contained, in 1800, 34,888 inhabitants, of whom 209 were slaves.—Also, a city, port of entry, and post-town of the above county, and one of the most considerable commercial towns in the state; situated on the W. side of the river Thames, about seven miles from its entrance into the Sound, and defended by fort Trumbull and fort Griswold. Here are two places of public worship, one for Episcopalians and one for Congregationalists; about 300 dwelling-houses, and 4600 inhabitants. The harbour is large, safe, and commodious, and has, on the W. side, a light-house. The exports for a year, ending Sept. 1794, amounted in value to 557,453 dollars. In this year 1000 mules were shipped for the West Indies; 14 miles S. of Norwich. N. lat.  $41^{\circ} 25'$ . W. long.  $72^{\circ} 15'$ . The township of New London was laid out in lots in 1648; it was called by the Indians "Namang" or "Toungog," and from being the seat of the Pequot tribe "Pequot." It was the seat of Sassaclus, the grand monarch of Long Island, and part of Connecticut and Narraganset.—Also, a small township of Hillsborough county, New Hampshire, incorporated in 1779, and containing 617 inhabitants; lying at the head of Blackwater river, and about three miles from the N.E. side of Sunapee lake.—Also, a post-town of Campbell county, Virginia, seated on rising ground, and containing about 130 houses, a court-house, and gaol. It has a magazine of arms, and a flourishing academy, 133 miles W. by S. of Richmond.

NEW MADRID. See *Madrid*.

NEWMANSTOWN, a town of America, in Dauphin county, Pennsylvania, on the E. side of Mill creek, containing about 14 houses; 14 miles E. by N. of Harrisburg.—Also, a town of North Wales, in the county of Flint; four miles N.E. of St. Asaph.

NEWMARKET, a small market-town and parish in the hundred of Prestatyn and county of Flint, North Wales, is situated at the distance of three miles and a half to the north of the city of St. Asaph. The church here is an ancient edifice, and in the cemetery stands a curious stone cross. Here are held the petty sessions for the hundred. The market is holden on Saturday; and the fairs, of which there are four annually, on the last Saturday in April, the third Saturday in July, the fourth Saturday in October, and the second Saturday in December. There is in this town a charity school, founded and endowed by Dr. Daniel Williams, a distinguished Dissenting minister. According to the parliamentary returns of 1811, the whole parish contained 89 houses, and 469 inhabitants.

NEWMARKET is a market-town, partly situated in the hundred of Chevely, Cambridgeshire, and partly in the hundred of Lackford, in the county of Suffolk, England. It consists of two parishes, one being in each county, and is 13 miles distant from Cambridge, and 61 from London. The houses are chiefly disposed in one long and wide street, in which are the two parish churches of St. Mary's and All Saints. The town has been twice nearly destroyed by fire; the first time in 1683, when the king, queen, and duke of York attended the



the races; the second conflagration was about the commencement of the last century. According to the population return in the year 1811, Newmarket contained 332 houses, and 1917 inhabitants. A market is held on Tuesdays; and two fairs annually. When the town obtained its charter does not appear; the earliest mention of it on record is in the year 1227; and it is probable it took its name from a market then recently established.

Newmarket Heath has long been celebrated in the annals of horsemanship as one of the finest race-courses in the kingdom. The diversion of horse-racing, though undoubtedly practised in the country in the time of the Romans, never made any considerable progress, but rather became extinct, till the accession of James I., who again introduced it from Scotland, where it came into repute from the spirit and swiftness of the Spanish horses which had been wrecked in the vessels of the Armada, and thrown ashore on the coasts of Galloway. From this period it became more fashionable; and Newmarket had probably a racing establishment as early as the reign of that monarch, who erected a house here, which was destroyed in the civil war, but was rebuilt by that distinguished patron of the turf, Charles II., and is still the residence of the sovereign, when he visits Newmarket. The idea of improving the breed of horses has, in a certain degree, induced the legislature to encourage this species of gambling; and even the throne seems to sanction its continuance; for in addition to the plates given by the nobility, the king gives two plates annually. The races are held seven times in the year; the whole of the race-course is in Cambridgeshire.

At the distance of about a mile and half from Newmarket, crossing the London road, runs a remarkable excavation, called the "Devil's ditch," which extends nearly in a straight line for seven miles, from Wood-Ditton to Reach, in the parish of Burwell; the most perfect part is for the space of a mile in the vicinity of Reach; the works here consist of a deep ditch, with an elevated vallum, the slope of which measures 52 feet on the west side, and 26 feet on the east; the whole of the works are about 100 feet in width. From the mode of disposing the excavated earth, it is the opinion of Dr. Stukeley, and other antiquaries, that the ditch was made some centuries before the time of Cæsar, by the first inhabitants who settled eastward, in order to secure themselves from the attacks of the inland aborigines. Various other conjectures have been formed respecting the origin of this and similar earth-works in this part of the country, which are unquestionably of very remote antiquity. The Devil's ditch at present serves for the boundary between the dioceses of Norwich and Ely. Lysons's *Magna Britannia*, vol. ii.

**NEWMARKET**, a post-town of the county of Kilkenny, Ireland, 129 miles S.S.W. from Dublin, and about 12 miles S. by W. from Kilkenny.

**NEWMARKET**, a post-town of the county of Clare, Ireland, situated upon a river which falls into the Fergus, 108 miles W.S.W. from Dublin, 14 W. by N. from Limerick.

**NEWMARKET**, a small market town of the county of Cork, Ireland, in the north-western part. It is situated on the river Allo, which afterwards unites with the Dalua, and is a considerable thoroughfare to the county of Kerry; 129½ miles S.W. from Dublin, about 30 N. by W. from Cork.

**NEWMARKET**, a post-town of America, in Rockingham county, New Hampshire, N. of Exeter; 13 miles W. of Portsmouth; incorporated in 1727, and containing 1027 inhabitants. Shells of oysters, muscles, and clams intermixed, have been found near Lamprey river in this town at the depth of 17 feet.—Also, a town of Shenandoah county in Virginia, containing 100 houses; 20 miles S.W. of Woodstock; inhabited by Germans.—Also, a post-town in Amherst

county, Virginia, on the N. side of James river, at the mouth of Tye river; 100 miles above Richmond.—Also, a post-town in Ross county, Ohio; 465 miles from Washington.

**NEW MARLBOROUGH**. See **MARLBOROUGH**.—Also, a town in King George's county, Virginia, on the W. side of Patowmac river; 10 miles E. of Falmouth.

**NEW MEXICO**. See **MEXICO**.

**NEW MILFORD**, a post-town of America, in Litchfield county, Connecticut, on the E. side of Housatonic river, 20 miles S.W. of Litchfield; containing about 500 houses, a church for Episcopalians, one for Congregationalists, one for Presbyterians, one for Baptists, and one for Quakers; also, seven forges, which manufacture 300 tons of iron, besides hollow ware.—Also, a post-town at the head of the tide on Sheepscot river, in Lincoln county, Maine; 10 miles N. of Wiscasset.

**NEW-MILLS**, a place, with a post-office, in Burlington county, New Jersey.

**NEWMILNS**, a considerable borough of barony, and a market-town, is situated in the parish of Loudoun and county of Ayr, North Britain. It is a place of great antiquity, but did not receive its charter of erection till the reign of James IV.; at which time it appears from the deed itself to have been a town of no small importance. The superior lords were the earls of Loudoun, and in their right the superiority is consequently now enjoyed by the countess of Loudoun and Moira. According to the population returns of 1811, the parish contained 461 houses, and 3170 inhabitants, of whom about 1500 may occupy the town, which is not so extensive as formerly.

**NEW MOON**. See **MOON** and **NEOMENIA**.

**NEWNHAM**, in *Geography*, a small market-town in the hundred of Westbury, and county of Gloucester, England, is situated on an eminence rising from the western banks of the river Severn, at the distance of 11 miles from the city of Gloucester, and 117 miles from London. Its origin is remote; in the Norman times it appears to have been fortified to repress the incursions of the Welsh; and in the records of St. Bartholomew's hospital in Gloucester, relative to grants of certain lands in Newnham, frequent mention is made of a castle here; but no remains of it are now to be traced. The fortifications on the south side of the town are probably of Norman date; the circumvallation on the back part must be referred to the time of the civil war, when Newnham was garrisoned for the king by sir John Wyntour, whose forces were obliged to surrender to colonel Massie. Newnham was one of the five boroughs in this county returned on a mandate from the crown, in the ninth year of Edward I., and was then governed by a mayor and burgeses; but the authority has long been vested in two constables, though a formal election of a mayor has, till lately, been kept up. A sword of state presented by king John is still preserved as a memorial of former greatness; it is of polished steel, highly ornamented, and of exquisite workmanship. The former importance of the town may likewise be inferred from many names of streets and lanes which appear in ancient grants, but whose situations are now unknown. It was also distinguished by being appointed for the meeting between king Henry II., and earl Strongbow, on the return of the latter from his conquests in Ireland. The parish church of Newnham stands on a commanding cliff near the river; the arch leading into the chancel is ornamented with zig-zag mouldings; and is supposed to have been preserved from the ruins of a more ancient structure, which stood at a place called Nabb's Ends. The population of this parish in the year 1811, was reported to parliament as 952, occupying 155 houses; the latter are mostly ranged in one long street. The chief employ of the labouring inhabitants is furnished by a verdigris



manufactory, and some ship-building. A glass-house was erected here in the reign of Charles I. but is now destroyed. A market is held on Fridays; and two fairs annually. A quay for vessels of 150 tons burthen was built about the middle of the last century; and some trade is carried on with Bristol, London, and other parts; but the navigation of this part of the river being unfavourable, a preference has been given to Gatcombe, a port a few miles lower down the river. Rudge's History of the County of Gloucester, two vols. 8vo. 1803. Beauties of England and Wales, vol. v.

NEWNHAM, *Cape*. See NEWENHAM.

NEW NORTH-WALES. See *New Britain* and *Wales*.

NEW ORLEANS. See *Orleans* and *Louisiana*.

NEW PALTZ, a township of America, in Ulster county, New York, bounded E. by Hudson river, S. by Marlborough and Shawangunk, containing 3255 inhabitants, including 308 slaves. The compact part contains about 250 houses, and a Dutch church; 10 miles from Shawangunk.

NEWPORT, a borough and market-town in the hundred of Wentloog, and county of Monmouth, England, is situated 24 miles from Monmouth, and 147 from London. It is called by Gyraldus Novus-Burgus, or New-town, and arose out of the declining greatness of Caerleon, and was by the Welsh denominated Castell-Newydd, or New-castle. Robert, earl of Gloucester, natural son of Henry I., erected a castle here for the defence of his possessions. This fortress descended from the earls of Gloucester, through several noble families, till on the attainer of Edward, duke of Buckingham, it was, together with the lordship, seized by Henry VIII. The present proprietor is William Kemeys, esq. of Maynec. The shell of the castle, which stands on the bank of the Usk, is a massive structure, but not of large dimensions, though it appears to have been formerly of greater extent. The building forms nearly a parallelogram, and is constructed with rubble, coigned with hewn stone. The side towards the town consists simply of a plain wall, which has led to the conjecture that it was erected solely for defending the passage across the river, but it is evident that formerly the works were much stronger on the southern side. Toward the north, in the centre, is a square tower, which served for the keep or citadel: beneath this is a Sally-port, facing the river, with a pointed arch and a groove for a portcullis; and on each side is a large massy tower. The centre contains a spacious apartment called the state-room; adjoining to this are the remains of the baronial hall. One of the collateral towers, though in a dilapidated state, is fitted up as an habitation.

The town was formerly defended by fortified walls, but no vestiges now remain. Leland mentions three gate-houses as standing in his time: one by the bridge at the east end of the town; another at the west end, near the church; and a third in the centre of the High-street. The site of the two first may yet be traced; the central one has been recently taken down.

Newport obtained a charter of privileges from Edward II.; further grants were bestowed by subsequent monarchs; and by a charter, dated in the 21st year of James I., it is now governed by a corporation, styled "The mayor, aldermen, and burgesses of the borough of Newport in the county of Monmouth." This borough, conjointly with Usk and Monmouth, sends one member to parliament; the elective franchise being vested in the resident burgesses. The town consists principally of one long, narrow street, extending from the flat bank of the Usk up to the eminence on which stands the parish church of St. Woolas, which Leland calls St. Guntle Olave, and which is the only place of worship on the establishment. This edifice consists of a lofty, square

tower, a nave with two aisles, a chancel, and a small chapel, now used only as a burial place. The church was erected at different periods. Its tower was built by Henry III. as a memorial of his gratitude to the inhabitants of the town for their successful opposition to Simon Mountfort, earl of Leicester. The nave, which is the only part remaining of the original structure, was built, if not in the Saxon, evidently in the earliest part of the Anglo-Norman period.

Leland states "ther was a house of religion by the key, beneth the bridge." This, Tanner conjectured was a monastery of friars preachers; because, at the dissolution, such a one was granted to Sir Edward Carn. Some remains are still standing, and consist of several detached apartments, and the northern transept of the conventual church; the gardens of the monastery are inclosed by the original wall. Newport-bridge, a stone structure of five arches over the Usk, was built at the expence of the county, under the direction of the son of the celebrated Edwards, who erected the famous bridge of one arch, called Pont-y-Prydd.

The inhabitants of the town are principally supported by the commercial relations of the port, which consist of foreign, coasting, and inland trade. The foreign trade has never arrived at any considerable eminence; but the coasting trade is more important: the exports are chiefly coals, with cast and bar iron from the different founderies in the western mountains, brought to the quay by the Monmouthshire canal; the imports are deals, furniture, and all kinds of shop goods. The inland and home trade has been much increased since the completion of the canal. The population of Newport, according to the return to parliament in the year 1811, was 2346, occupying 453 houses. Four fairs are held annually, and a market weekly on Saturday. Cox's Historical Tour in Monmouthshire, 2 vols. 4to.

NEWPORT, a borough in the parish of St. Stephen, in the north division of the hundred of East, in the county of Cornwall, England, is situated 214 miles distant from London, in the vicinity of Launceston, to which it appears as a suburb, and was anciently under the same jurisdiction; but having been granted to the priory of St. Stephen's, it obtained some distinct privileges. After the dissolution, the inhabitants were encouraged to challenge the separate right of returning members to parliament; and the property of the borough being then vested in the crown, the privilege was awarded without much investigation. The first return was made in the sixth year of Edward VI., and two members have ever since been regularly chosen. The right of election is vested in two officers, called vianders, (who are annually appointed at the court-leet held by the lord of the manor,) and all the inhabitants paying scot and lot; the whole number scarcely amounting to thirty. The whole borough is the property of the duke of Northumberland, who has a seat in the vicinity. (See *LAUNCESTON*.) Pol-whele's History, &c. of Cornwall, two vols. 4to.

NEWPORT, a large borough and market-town in the half hundred of West-Medina liberty, in the Isle of Wight, and county of Southampton, England, is situated near the centre, and may be regarded as the metropolis of the island. This place has risen upon the ruins of Carisbrooke, which was formerly a very considerable town. Rich de Redvers, second earl of Devonshire, granted the first charter of privileges to Newport in the reign of Henry II., but this contained little more than a grant of liberties in general terms. The next deed was granted by the countess Isabella de Fortibus, and confirmed by Edward III., and also by several succeeding monarchs. This grant conferred the privilege of a market and tolls, and many other immunities, but the town was not incorporated till the reign of king James I., whose charter was afterwards confirmed and extended



tended by Charles II. Under this last deed the government is vested in a mayor, twelve aldermen, a recorder, town clerk, and twelve burgesses, who are chosen from among the principal inhabitants. Two members are sent from this borough to serve in parliament; they are elected by the corporation, and returned by the mayor. The first return was made in the 23d year of Edward I., but the privilege was never again acted upon till the 27th year of queen Elizabeth, when it was restored through the interest of sir George Carey, then captain of the island.

The situation of Newport is lofty and extremely agreeable, being watered on its eastern side by the principal branch of the river Medina, (whence it was anciently called the borough of Medina,) and on the west by a small rivulet, which rises at Rayner's-Grove, about three miles off, and joins the Medina at the Quay, where it becomes navigable for vessels of large burden. The houses of this town are generally constructed of brick, and are disposed into five parallel streets running east and west, and intersected by three others at right angles. According to the original plan, it was intended that there should have been three large squares, at the crossings of the streets, to be appropriated as market-places; but the uniformity of this design has been much impaired by various encroachments. In the largest of these openings stands the town-hall, where meetings of the corporation, and the several courts of the borough, as well as the knighten court, or curia militum, are held. This court is under the presidency of the governor's steward, or his deputy. It was instituted in the feudal times, as is commonly supposed, by William Fitz-Osborne, to whom the Isle of Wight was granted by king William I., soon after the conquest. The original judges were such as held a knight's fee, or part of a fee *in capite*, from the proprietor of the lordship. The present judges are freeholders holding of Carisbrooke Castle, who sit in rotation, three or more at a time, and give their decisions without the intervention of a jury. The Monday of every third week is the day on which this court meets for the dispatch of business; when it is empowered to hold "pleas of all actions of debt and trespass, under the value of 40s.; and upon replevins granted by the steward, or his deputy. The proceedings are of the same nature as those in our courts of equity, and are carried on by attorneys admitted by the court. The actions for debt are tried by proof of plaintiff or defendant; and actions of trespass are determined by proof only."

The church of this town, also standing in one of the squares, is a low, ancient edifice, dedicated to St. Thomas, and hence conjectured to have been originally founded about the time of Henry II. The different styles of its architecture, however, evidently shew it to have undergone very material alterations, at various periods, since its first erection. It is only a chapel of ease to Carisbrooke. On the pulpit, which is of waincot, is carved a number of figures, representing the cardinal virtues and the liberal arts.

Among the many distinguished persons buried here was the princess Elizabeth, second daughter of Charles I., who was detained a prisoner in Carisbrooke Castle, and died there of a broken heart, at the age of fifteen. The leaden coffin, containing her remains, was discovered, some years ago, in a vault under the chancel. The principal monument, in point of grandeur, is that of sir Edward Horsey, one of the captains of the island in the reign of queen Elizabeth. Besides the church belonging to the establishment, there are meeting-houses in this town for the Roman Catholics, the Methodists, the Arminians, the Baptists, and the Quakers. Here is a free grammar-school for a limited number of boys, which has now almost dwindled to a sinecure. The school-room is memorable for having been the place where the ne-

gociations between Charles I. and the parliamentary commissioners were discussed. Another school for clothing and instructing girls has also been instituted, and two Sunday schools, all of them partly supported by endowments, and partly by subscription. The places of public amusement are a theatre, and an elegant building lately erected, and appropriated to assemblies and concerts. A philosophical society was established here about ten years ago.

Newport is a scene of great bustle and activity. The market days are Wednesday and Saturday, when provisions of all kinds are abundant, except fish, which are extremely rare. This was formerly a great mart for grain, but the sale of that article has considerably diminished of late years. According to the returns of 1811, the houses in the town are estimated at 694, and the inhabitants at 3855 in number.

About a mile north from Newport stands the House of Industry for the Isle of Wight, which was erected about the year 1772. It is a large edifice, consisting of several ranges of buildings, capable of accommodating 700 persons. The management of this charity is vested in a corporation, styled "The Guardians of the Poor within the Isle of Wight," and composed of 24 directors, and 36 assistants. At a short distance hence are the Parkhurst barracks and military hospital, which are scarcely inferior to any similar establishments in the kingdom. Carisbrooke Castle lies nearly a mile south-west from the borough, and is one of the most ancient fortresses mentioned in the annals of English history. Its origin is by some assigned to the Britons, and by others to the Romans; but the first authentic notice of it occurs in the Saxon annals, A.D. 530, when it was besieged and taken by Cerdic, the first king of Wessex, whose nephew, Withgar, is said to have rebuilt it. After the Conquest, it was much altered and enlarged, and some fortifications were added by queen Elizabeth. King Charles I. remained a prisoner here, before he was conducted to London for trial; and is supposed to have written his "Suspiria Regalia," during that period. The greater part of this castle is now in ruins, but the tower-gateway and parts of the keep are tolerably perfect. The latter is occasionally occupied by the governor of the island. The whole fortress occupies an eminence, and, when in a perfect state, must have been very strong. In the keep is a very deep well, from which the garrison was supplied with water. The village adjoining retains few marks of its former consequence, except its church, which was built by William Fitz-Osborne, already mentioned, and is a spacious building, with a handsome embattled tower at the west end. Near the church stand the remains of a priory, also founded by Fitz-Osborne, and appropriated by him as a cell to the Benedictine abbey at Lyra, in Normandy. Albin's History, &c. of the Isle of Wight, 8vo. Worley's History, Antiquities, &c. of the Isle of Wight, 4to.

NEWPORT, a small market-town in the south division of the hundred of Bradford, and county of Salop, England, is situated on the borders of the shire, at the distance of 12 miles from Drayton, and 139 from London. The Watling-street, or great Roman road, passes within two miles of this place, which anciently was the property of the Audleys, and afterwards of a family of its own name, to whom it gave the title of baron. It consists chiefly of one principal street, of considerable length, and a few narrow lanes diverging from it. The church stands in the main street, and is probably the most incongruous example of ecclesiastical architecture in the kingdom. The body is an ancient stone structure of the 15th century, and retains enough of interior embellishment to evince its former magnificence, while the side aisles are of modern erection, and built with brick, after the model of the Greeks. The abbot and convent of  
St.



St. Peter and St. Paul, at Shrewsbury, were the original patrons of this church; but it was purchased from them in the reign of Henry VI. by Thomas Draper, a citizen of London, who made it collegiate, and placed in it a custos and four fellows. The former was the parish priest. William Adams, esq. a native of the town, founded the free-school, which is a stately edifice of brick, and has a library attached to it for the use of the scholars. The lands belonging to this institution are exempted from parliamentary, parochial, or any other kind of taxes, by virtue of a grant from Oliver Cromwell. Pupils are qualified here for the university. Near the school stand two handsome alms-houses, erected and endowed by the same munificent founder, who likewise gave 550*l.* towards the building of a town-house. Newport sustained very serious damage from fire on the 16th of May, 1665. — One hundred and sixty houses, with their contents, were on this occasion consumed by the destroying element. The market-day is Saturday; and here are six fairs annually. This town contends with Shifnal for the honour of having given birth to the celebrated Thomas, or Tom Brown, who died in 1704, in extreme indigence, and lies buried in the cloisters of Westminster Abbey. His whole works were printed three years after his death in four volumes, comprising dialogues, essays, satires, letters from the dead to the living, with a number of translations, and other miscellaneous pieces. These writings are perfectly characteristic of the author's mind; they are replete with wit and humour, and display a fund of learning, but are debased by low puns and licentious imagery.

According to the parliamentary returns of 1801, the houses contained in this parish amounted to 323 in number, and the inhabitants to 2307. In those of 1811, the former are estimated at 478, and the latter at 2114, being an increase of 155 houses, and a decrease of 193 males, for the number of women is augmented. This indicates a very gross error in one of the reports, and, with many other similar contrarieties, shews how little dependence can be placed on such documents as the basis of statistical or political reasoning.

In the vicinity of the town, on the south, is the village of Lleshull, noted for its abbey, the ruins of which are situated in a retired and solitary position, and partly enveloped in trees. A large portion of the abbey church remains, but so mutilated, as to render it difficult to form a just idea of its original architecture, except from the structure of its doors and windows. A fine Norman arch, highly recessed, with ribs and running foliage, forms the western entrance, and seems to have also constituted the basis of a tower. The south door, which communicated with the cloister, is one of the most enriched early Norman arches in the kingdom. The east window is of large dimensions, with a beautiful pointed arch of the 14th century, but the windows of the choir are narrow, plain, and round headed. The whole measures 228 feet in length, and 36 in breadth, exclusive of the side aisles. The other buildings are in a much more ruinous condition than the church, though, from what yet exists of them, they appear to have evidently been of very considerable extent. Chetwynd-park, a seat of the noble family of Chetwynd, lies on the north side of Newport, and about two miles beyond this, and close upon the confines of Staffordshire, is a very large encampment, probably of Roman origin. *Beauties of England and Wales*, vol. xiii.

NEWPORT, or *Três Draeth*, a borough, market-town, and parish, in the hundred of Cemaes, and county of Pembroke, South Wales, is situated on the river Nefern, at the distance of eight miles south-west from the town of Cardigan. This town was incorporated by one of the Martins, lords of Cemaes, who, as barons marchers, enjoyed all the

privileges of sovereignty. The castle, or “*Caput Baroniz*,” stood on a knoll above the town, at the extremity of the principal street, and, though now a complete ruin, still retains marks of former strength and magnificence. The area which it occupied is about 50 paces in diameter, and nearly circular. The grand entrance was by a gateway between two noble bastion-towers, facing the north. At the west end are the remains of another bold bastion, whilst two others are on the south and east sides. The state rooms and family apartments appear to have formed the south-east portion of the edifice, which was surrounded by a very broad and deep moat, having a command of water. Under the castle was a gaol for the confinement of felons, who had been apprehended by the lord's tenants; for the proprietor of this castle possessed the power of life and death as absolutely as the monarch himself. Indeed the privileges of the lord of Cemaes were greater than those exercised even by the lord palatine of Pembroke. A writ of error ran out of the king's courts into the palatinate; but here the parliament renewed errors. Here the lord marcher had intestates' goods, which the earls palatine had not; and he was sworn to perform contracts like any free and absolute prince, whereas the earls bound themselves by covenant as other subjects were accustomed to do.

The situation of Newport is highly picturesque. Behind the castle, the mountain of Carn-Englyn rises with the utmost boldness; and a view of the bay, which derives its name from the town, opens beautifully in front. From the distribution of the streets, intersecting each other at right angles, this appears to have been once a very considerable place. About two centuries ago, the inhabitants carried on an extensive trade in woollens; but owing to a great mortality, which happened towards the close of the 16th century, the town fell so much to decay, that even its market was discontinued. The market, however, has been revived for many years; and, of late, trade has again begun to flourish, and fill up a few of the chasms in the depopulated streets with new buildings. As the Nefern is navigable for nearly two miles above the town, and forms a commodious bay for the anchorage of shipping at its confluence with St. George's Channel, the position of Newport would be extremely favourable for commerce, but for a bar of sand at the entrance of the bay. It has, besides, the advantage of having in its immediate vicinity large quarries of slate, capable of being rendered an important article of traffic, as there is a deficiency of that material throughout a great extent of the western coast. The government of this town continues to be vested in a mayor, a recorder, two bailiffs, and six constables, in conformity to its original charter. These are empowered to hold courts for the recovery of small debts, and also for the punishment of trivial offences. The petty-sessions for the hundred are held here. The market is weekly, and there is a fair for cattle on the 27th of July annually. Here was anciently a large house of friars, of the order of St. Augustine. In the church, a very old edifice in the shape of a cross, may be seen two monuments, supposed to commemorate sir William Martin and his lady, the lord Rhys's daughter. The living is a discharged rectory. According to the parliamentary returns of 1811, this parish contains 355 houses, and a population of 1433 persons.

To the east of Newport, on the opposite side of the river, is the village of Nevern, once a borough, and the residence of some powerful chieftain, previous to the Norman conquest. The remains of the castle consist of little more than its foundations, but these are sufficient to point it out as having been a fortress of great extent and strength. The appearance of this village is highly delightful, as it is seated on the



margin of a beautiful stream, in the midst of rich meadows, gardens, and orchards, and encompassed by swelling hills, profusely covered with wood. In the church-yard there is a number of yew trees, which conceal, under their thick foliage, one of the early stone crosses, consisting of a tall shaft, richly ornamented, and having on the central compartment some strange characters, not yet decyphered, notwithstanding the exertions of the late Dr. Lort to effect that object. Nevern had a portreeve, and courts for its government, as well as a council of eighteen burgesses, for many years subsequent to the foundation of Newport, which rose upon its ruins. About a mile from the latter town, on the road to Ffiguard, is a cluster of kiltvaens, surrounding a cromlech, long since overturned. All are inclosed by the remains of a circle of large stones. On the peninsula of Dinas-head, formed by the bays of Ffiguard and Newport, stands another cromlech, which, Fenton says, is unquestionably the largest Druidical relic in Wales. The impost rests upon two columnar stones, gently tapering to a point, with one between, which does not touch, at the south end, and a single upright at the north extremity; there being but three actual supporters. The incumbent stone is still eighteen feet long, nine broad, and three thick; though another, lying on the ground, ten feet long, and five broad at one end, has evidently been broken off from it, since it was placed in its present position. Many fallen stones, which probably formed a circle round the cromlech, are scattered over the field where it is fixed. Historical Tour through Pembrokeshire, by Richard Fenton, esq., F.S.A., 1 vol. 4to., 1811. Carlisle's Topographical Dictionary of Wales, 4to.

NEWPORT, a port-town of the county of Tipperary, Ireland, where is a charter-school. It is on the river Mul-kerna, near the foot of the Keeper mountain. It is 86 miles S.W. from Dublin, and 8 N.E. from Limerick.

NEWPORT, a township of Nova Scotia, in Hants county, on the river Avon.—Also, a township in Cheshire county, New Hampshire, E. of Claremont; incorporated in 1761, and containing 1266 inhabitants.—Also, a maritime county of Rhode island, comprehending Rhode island, Canonicut, Block, Prudence, and several other small islands. It is divided into seven townships, and contains 14,845 inhabitants.—Also, the chief town of this county, and the semi-metropolis of the state of Rhode island, situated on the S.W. end of Rhode island, five miles from the sea. Its harbour, which spreads westward before the town, is one of the finest in the world, having a safe and easy entrance, and so spacious, that a large fleet may anchor in it and ride in perfect security. The town lies N. and S. upon a gradual ascent E. from the water, and exhibits a beautiful view from the harbour and the neighbouring hills. To the W. of the town is Goat island, on which is Fort Washington. Newport contains about 1000 houses, chiefly of wood, and 6739 inhabitants. It has ten houses for public worship, four for Baptists, two for Congregationalists, one for Episcopalians, one for Quakers, one for Moravians, and one for Jews. The other public buildings are a state house, and an edifice for the public library. In this town are an academy, under the direction of a rector and tutors, and a marine society, established in 1752, for the relief of distressed widows and orphans, &c. This city, distinguished by the beauty of its situation and the salubrity of its climate, is abundantly supplied with a great variety of excellent fish; and it has also a considerable trade. A cotton and check manufactory has been lately established. The exports for a year, ending September 1794, amounted in value to 311,200 dollars. The town was first settled in 1639; 30 miles S. by E. of Providence. N. lat. 41° 29'. W. long.

71° 17'.—Also, a township in Lower Canada, 20 miles E. of Ascot, including about 30 inhabitants.—Also, a small port-town in Newcastle county, Delaware, on the N. side of Christiana creek, three miles W. of Wilmington; containing about 200 inhabitants, and carrying on a considerable trade with Philadelphia in flour; 31 miles S.W. of Philadelphia.—Also, a township in Luzerne county, Pennsylvania, on the S.E. side of the E. bridge of the Susquehanna lake Wilksborough.—Also, a small port-town in Chelter county, Maryland; 94 miles S. by W. of Baltimore.—Also, a very thriving settlement in Liberty county, Georgia, situated on a navigable creek; 34 miles S. of Savannah. This place, commonly known by the name of "Newport Bridge," is the rival of Sunbury, and commands the principal part of the trade of the whole country.—Also, a place, with a post-office, in Cooke county, Tennessee; 529 miles from Washington.

NEW PORT-Glasgow. See *Port GLASGOW*.

NEWPORT-Pagnell, a market-town in the hundred of the same name, in the county of Buckingham, England, is situated 15 miles distant from the county-town, and 51 miles from London, on the road to Northampton, near the banks of the river Ouse, and is divided into two unequal parts by the small river Lovet. The town has been of considerable consequence from a remote period. The latter term in its name was derived from the Paganells, or Pagnels, to whom the manor descended from William Fitzansculf, who possessed it at the time of the Norman conquest. The Paganells had a castle at Newport, the site of which is still called the Castle Mead: Leland and Camden both mention this edifice, but there were no remains of the building even in Camden's time. In the early part of the civil war of Charles I.'s time, Newport was garrisoned by prince Rupert; but soon after the first battle of Newbury it was abandoned by the royalists, and proved an useful station to the parliamentary army during the remainder of the contest. Sir Samuel Luke, the supposed Hudibras of Butler, was governor in the year 1645. The parish-church of Newport is an ancient and spacious structure. The vicar is always master of an ancient hospital, originally founded by John de Somery, in the year 1280, and dedicated to St. John: it was refounded by Anne, queen of James I., and from her named Queen Anne's Hospital. Two other hospitals were founded here at a very remote period, but the latest accounts relative to them reach no farther back than 1270. In the church-yard are seven alms-houses, founded and endowed, in 1763, by John Revis, citizen of London, for four men and three women, who receive 10*l.* per annum each, besides clothes and fuel. In addition to these charitable institutions the distresses of the poor are mitigated by various donations and legacies. In the return made under the population act of the year 1811, this town was stated to contain 556 houses, occupied by 2515 persons. A market was either originally granted, or confirmed by charter, to Roger de Somery, in the year 1270, together with a fair of eight days; the market was again confirmed to John Botetort in 1333. The market-day is Saturday; the principal articles are corn and provisions. Here are now six annual fairs. The labouring classes of the people are chiefly supported by lace-making: it is estimated that more lace is manufactured in this town and its vicinity than in all the other parts of England: a special market is held on every Wednesday for its sale; and great quantities are vended at the fairs.

At Tickford, adjoining to this town, a cell for Clunian monks was founded by Fulk Paganell, in the reign of William Rufus. King Henry VIII. suppressed this monastery in 1525, and gave it, with its lands, to cardinal Wolsey. It afterwards reverted to the crown, and was granted by James



James I. to his physician Dr. Atkins, and was the seat of his descendants. The site of the priory is now occupied by a neat modern house, called Tickford abbey, the property of Mr. Hooton: there are no remains of the conventual buildings. Mr. Hooton's family have a burial place in a retired part of the garden, which is supposed to have been the cemetery of the cell: an obelisk has been erected there to the memory of the late Mrs. Hooton. Tickford park, and the manor of Tickford-end, which were part of the Atkins' estate, are now the property of Mr. Vanhagen. The manor of Caldecot, (a hamlet of this parish,) which belonged to the priory of Tickford, was sold by the Atkins' family, in 1758, to William Backwell, esq. banker of London: he, in 1769, bequeathed it to William Harwood, esq., who had assumed the name of Backwell, and is the present proprietor.

At Tyringham, about two miles from Newport-Pagnell, is the seat of William Praed, esq. The manor belonged to an ancient family, who took their name from the village so early as the year 1170, and it continued in the family till the year 1685, when the male line became extinct by the death of sir William Tyringham: from his daughter it has descended to Mr. Praed, who has pulled down the old manor-house, and erected an elegant modern mansion, from the designs of John Soane, esq. professor of architecture to the Royal Academy. The same profound architect also gave designs for a lodge, and a bridge across the river which runs through the park. In the stair-case, hall, dining-room, and library, the artist has displayed considerable taste and judgment. About a mile from Tyringham is Gothurst, in which parish is a fine old mansion, the seat of Miss Wright, one of whose ancestors purchased it in 1704. The house is large, and its chief front appears to have been built in the time of queen Elizabeth. It was possessed by the Digby family in the time of king James I.; and contains some curious portraits of sir Everard and sir Kenelm Digby, also other branches of that family. Lysons' *Magna Britannia*, vol. i.

NEWPORT *Pratt*, a sea-port and post-town of the county of Mayo, Ireland, near the mouth of a small river, running into the north-eastern part of Clew bay. It is a place of little trade. Newport is 123 miles W.N.W. from Dublin, and 9 from Castlebar.

NEWRAH BRIDGE, a village of the county of Wicklow, Ireland, at which there is an inn, where those who visit the interesting scenes of this county often procure lodging. It is about two miles N.W. from Wicklow, and 22 miles S. from Dublin.

NEW RIVER, a most important artificial canal, or stream of water, passing through parts of the counties of Hertford and Middlesex, England, was contrived and principally executed by an individual, sir Hugh Middleton, in order to supply the British metropolis and its environs with fresh water. That of the Thames, though extremely beneficial to London, was so liable to alteration, and subject to foulness, that a copious supply of pure water was extremely desirable. Besides, the Thames water must be forced to ascend by machines, even for the lower parts of the city: whereas, a stream on the northern side of London may be made to flow, in a natural descent, to almost any quarter of the widely extended metropolis. From these considerations, in the reign of James I., Hugh Middleton, citizen and goldsmith, projected the plan of bringing water out of Hertfordshire, in a channel to London. Meeting with no co-operation, he, at length, in the year 1608, commenced the undertaking at his own expence; and, after exhausting all his resources, and being refused aid from the corporation of London, he was enabled, by the assistance of the king, to bring it to completion. On September 29, 1613, the water was let into the New River Head, at Islington; but

the projector was ruined by the expences, and it was long before the scheme was rendered useful and beneficial to the public. The New River is formed by the collected waters of several springs, which rise at Chadwell, near Ware, Hertfordshire, about 20 miles north-west from London. These springs are collected into a large, open basin of considerable depth, near which a stone is placed, with inscriptions, implying that the stream was opened in 1608, and that from the Chadwell spring the river flows 40 miles. The original supply of water having been found inadequate to the consumption, the mill-stream of the river Lea, which runs near it, was resorted to; and after various disputes and litigations between its proprietors and those of the New River, the mill has at length become the property of the latter company, who have now an unrestricted use of the water; so that the river Lea may be considered as one of the sources. On a sluice leading from it are flood-gates, with a building, in which a man is placed, whose constant employ is to raise or lower them, according to the fulness of the river below; and that he may not err in the quantity supplied, a gauge is fixed across the sluice, consisting of a stone of great bulk, under which all the water passes; so that the current is regulated with the greatest exactness. To preserve a proper level, the New River takes such a winding course, that the length of the channel is nearly thirty-nine miles. Passing Ware, Amwell, Hoddeston, and Cheshunt, it enters Middlesex near Waltham-Croft; bending towards Enfield-Chase, it returns to the town of Enfield; and at Bush-hill was formerly carried across a valley, in a wooden aqueduct, or open trough, 660 feet in length, supported by arches; but the improvement in canal making has suggested a better mode to effect the purpose by means of a mound of earth, over which the river passes in a new channel, which was completed in the year 1785. Hence the river proceeds with devious bends to Hornsey, between which village and High-bury it was formerly conveyed in another wooden aqueduct, now superseded, like the other, by a bank of clay. Still winding, it reaches Stoke-Newington, and passes on to the east side of Islington, where it has a subterraneous channel, for 200 yards beneath the street. Just before this part is a building, whence several mains, or pipes, are sent to supply the eastern side of London. After passing under the road, the New River emerges and coasts the southern side of Islington, till it reaches its termination at the grand reservoir, called the New River Head. The width of the river near Islington is fourteen feet and a half, the average depth four feet and a half, but the depth decreases on ascending towards its source. The number of bridges which cross the river in its whole course is about two hundred: in various places are sluices to let off the waste water; which, with other works, excited admiration in the earlier stage of this branch of mechanics, but are now overlooked in the wonders of canal navigation. Truly admirable are the contrivances for distributing the water through the various parts of London. From a circular basin, now thrice its original size, which first receives it, the water is conveyed by sluices into several large brick cisterns; whence it passes through large wooden pipes to the several districts, and is conveyed into the houses by leaden pipes. At the New River Head is a building, containing two steam-engines and a water-engine for forcing the water to a higher reservoir near Pentonville, and to another near Tottenham-court road, for distribution to the western parts of the town. Near the former reservoir, in a field, a conspicuous object appears, the use of which is little known. It is an iron pipe, twelve feet high, and four feet eight inches in circumference, with a wooden tub placed on its top. It acts in the double capacity of an air and waste water-pipe, and is useful in preventing the burst-



ing of the pipes, which was formerly very frequent from the force of water, or from compressed air. A new reservoir, communicating with that at Pentonville, has been recently constructed by the side of Tottenham-court-road, for the supply of Mary-le-bone and its vicinity: the mains from it are iron pipes of four feet eight inches circumference.

The property of this great concern was originally divided into 72 shares, of which 36 were vested in sir Hugh Middleton, who was obliged to part with them to various persons; these are termed adventurers' shares. The other thirty-six were vested in the crown for the money advanced by king James towards the undertaking. These were alienated by Charles I., and are called king's shares; but as the crown had no concern in the management, so the holders of these shares are excluded from the direction. The original value of the shares was 100*l.* each, but so discouraging were the first prospects, that they fell to a very low price. At present they are worth an hundred times their first value: a rise in property scarcely to be paralleled, and demonstrative of the increase of buildings in the capital. The management of the company's affairs is vested, by charter, in twenty-nine holders of adventurers' shares, who form a board. The officers are, a governor, deputy-governor, a treasurer, and a clerk. Few public companies surpass this in property and extent of concerns. The constant repairs and improvements employ a vast number of men and horses; and the whole system of the distribution of the water is so complicated, as to require the utmost skill and attention on the part of the surveyor and other officers.

The New River is a considerable ornament to many seats and pleasure-grounds in its course; though it has too much canal-like regularity to be truly picturesque. It is likewise of great utility in affording a supply of water for cattle, and for various other purposes. Hunter's History of London and its Environs, 4to. 1808. Brayley's History of Middlesex and London, 8vo. 1810-13.

NEW RIVER. See KENHAWAY. See also THAMES. See also NEW.

NEW RIVER Inlet, a channel between two small islands, on the coast of North Carolina, leading to New river. N. lat. 34° 27'. W. long. 77° 31'. See NEW.

NEW ROCHELLE, a post-town of America, in West Chester county, New York, in Long Island sound, containing, in 1790, 692 inhabitants; 20 miles N.E. of New York city.

NEW ROSS. See ROSS.

NEWRY, a considerable sea-port and post-town of the county of Down, Ireland, situated on the Newry water, which falls into the bay of Carlingford, and which was rendered navigable to this town. It was formerly a pass and military post of considerable importance, as well as the seat of an abbey, whose head wore a mitre, and the possessions of which were very extensive. These were granted by Edward VI. to marshal Bagnell, whose name often occurs in the history of that period, and were formed into the lordship of Newry, which still belongs to the Needham family descended from him. In 1689 it was burned by the duke of Berwick to secure his retreat to Dundalk, when pursued by duke Schomberg. Since that time it has considerably increased, and ranks next to Belfast amongst the towns of Ulster. This increase has been chiefly owing to its canal, by which a communication has been formed between lough Neagh and the bay of Carlingford, by means of which vessels of 50 or 60 tons are enabled to pass through the heart of Ulster. The linen manufacture was carried on very extensively, and large quantities of linen were exported, but this trade has been of late much injured. There is a very considerable export of butter, beef, pork, and grain, especially of the first, which is brought from the counties

of Cavan and Monaghan, and even from that of Sligo. The imports consist chiefly of those commodities which are wanted to supply the extensive range of country, with which, by its canal, there is a water communication; and these articles in an opulent manufacturing country are daily increasing. Flax seed and coal are amongst the most considerable. There are also some extensive manufactories and other lucrative establishments. Newry is what is called a *potwalloping borough*, and returns a member to the parliament of the united kingdom. The number of electors is considerable, but the influence of the proprietor generally prevails at an election. In consequence of the grant before noticed, the proprietor, lord viscount Kilmorey, not only receives the tithes, and grants marriage licenses, but has also great civil authority, though some of his privileges have been purchased by the state. Newry is 50½ miles N. from Dublin. N. lat. 54° 10'. W. long. 6° 15'. Beaufort, Coote, Wakfield, &c.

NEWS, FALSE. See FALSE NEWS.

NEWS Shelf, in *Geography*, a shoal on the N.W. coast of Riou's island, in the Pacific ocean. S. lat. 8° 50'. E. long. 220° 47'.

NEWSPAPERS; for an account of their number in London, see LONDON. By the 44 Geo. III. c. 98. every public newspaper, contained in half a sheet or less double demy, or in one sheet single demy, not exceeding 32 inches in length, and 22 inches in breadth, is chargeable with a duty of 3½*d.*; and if larger than half a sheet of double demy, or one whole sheet single demy of the same sizes respectively, 3½*d.* By 37 Geo. III. c. 90. a discount is allowed, under certain restrictions, of 16*l.* per cent. to those who pay at one time 10*l.* or upwards: but by 49 Geo. III. c. 50. the discount shall be made, provided the price of the newspapers be not advanced more than one halfpenny above the price at which they were entitled to the allowances of such discount under the said act of 37 Geo. III. c. 90. A penalty of 20*l.* is imposed on those who do not print the full price on newspapers. On every pamphlet contained in half a sheet of paper, there is a duty of ½*d.* On every printed copy of a pamphlet larger than half a sheet, and not exceeding a whole sheet, 1*d.* Above one sheet, and not exceeding six sheets in octavo, or a lesser page, not exceeding twelve sheets in quarto, or twenty sheets in folio, for every sheet which shall be contained in one printed copy of it, 2*s.* (10 Ann. c. 19. 44 Geo. III. c. 98.) These duties admit of certain exemptions. If any person shall write, print, or expose to sale any pamphlet or newspaper, liable to the duties above-mentioned, the said pamphlet exceeding one sheet only excepted, before the paper shall be stamped, he shall forfeit 10*l.* with full costs. If any, containing more than one sheet, shall be printed or published, and the duty not paid, and title registered, and one copy stamped deposited where required so to be, within the time limited of six days after printing, within the bills of mortality, and without the bills at fourteen days, the author, printer, and publisher, and all other persons concerned, shall lose all property in it and in every copy of it, and also forfeit 20*l.* with full costs. Nor shall any person expose to sale any such pamphlet, without the name and place of abode of some known person, by or for whom it was printed or published, written or printed thereon, on pain of 20*l.* Pamphlets unfold shall be cancelled by the commissioners, and the like number of other sheets stamped *gratis* shall be allowed for them. (44 Geo. III. c. 98.) Or, instead of these allowances on a cancelling of newspapers remaining unfold, there shall be an abatement made to every person who shall pay at one time for newspaper stamps 10*l.* or upwards, after the rate of 4*l.* in the 100*l.* No hawker



of newspapers, or other person, shall let out any newspaper for hire to any person, or to different persons, or from house to house, on pain of forfeiting 5*l.* (29 Geo. III. c. 50.) By 16 Geo. II. c. 26. any person convicted of selling, or exposing to sale, any newspaper, or any book, pamphlet, or paper deemed to be a newspaper, unstamped, may be committed to the house of correction for any time not exceeding three months: and any person printing or publishing, and keeping in his custody any newspaper, &c. or paper not duly stamped, shall forfeit for every such paper 20*l.* over and above all other penalties. (38 Geo. III. c. 78.) Nor shall any newspaper be printed on paper exceeding 32 inches in length, and 32 in breadth. (44 Geo. III. c. 98.) Any person printing or publishing seditious matter, under colour of its having been printed in a foreign paper, shall, upon conviction, be committed to prison for a term not exceeding twelve, nor less than six months; and be liable to such other punishment as may by law be inflicted in cases of high misdemeanors. (38 Geo. III. c. 78.) For every advertisement in the Gazette, or other printed paper, published weekly, or oftener, or in any periodical paper or pamphlet published at any time exceeding a week, shall be paid by 44 Geo. III. c. 98. 3*s.* But nothing herein shall extend to any single advertisement printed by itself.

NEW SALEM, in *Geography*. See SALEM.

NEW SHARON. See SHARON.

NEW SOUTH WALES. See WALES and *New Britain*.

NEW SPAIN. See MEXICO.

NEW STOCKBRIDGE. See STOCKBRIDGE.

NEW SWEDELAND, the name of a territory between Virginia and New York, when in possession of the Swedes, and which was afterwards possessed or claimed by the Dutch: the chief town was called Gottenburgh.

NEWT, in *Zoology*. See EFT, and LACERTA *Aquatica*.

NEW THAMES, in *Geography*. See THAMES.

NEWTON, THOMAS, in *Biography*, who flourished in the 16th and 17th centuries, was the eldest son of Edward Newton of Prestbury, in Cheshire, where he was born. He received the first rudiments of grammatical learning under John Brownfword, for whom he appears to have retained the most ardent affection. In his encomium on several illustrious men of England, he applies the following remarkable distich to him:

“Rhetora, grammaticum, polyhistora teque poetam  
Quis negat?—is lippus, luscus, obesus, iners.”

So great, indeed, were his respect and attachment for the memory of this gentleman, that he erected a monument to him in the church of Macclesfield, in Cheshire, with a Latin inscription. Newton, the subject of this article, was sent very young to Oxford, from whence, in a short time, he removed to Cambridge, where he entered himself in Queen's college, and became so eminent for his skill in Latin poetry, that he was ranked among the most celebrated modern poets who have written in that language. After this he returned to his native county, and having obtained the warm and zealous patronage of Robert, earl of Essex, he taught school, and at the same time practised physic with success at Macclesfield. He was likewise in holy orders, and afterwards became beneficed at Little Ilford, in Essex, where he also exercised his profession as a schoolmaster, and where he continued till his death, which happened in 1607. He was buried in the church belonging to that village, for the decoration of which he left a considerable legacy. He wrote and translated many books, and among the latter was the tragedy of Seneca, entitled “Thebais.” He undertook also the publication of the other tragedies of this

poet, translated by Heywood, Neville, Nuce, &c. *Biog. Dram.*

NEWTON, JOHN, an English mathematician, and divine of the established church, was born at Oundle, in Northamptonshire, in the year 1612. Having attained a good share of classical knowledge, he was, at the age of fifteen, entered a commoner at St. Edmund's hall, Oxford. In the year 1641, he took his degrees of B.A. and M.A.; the latter in precedence to many students of quality, on account of his distinguished talents in the several branches of literature. He was particularly attached to the study of mathematics and astronomy, and had applied himself so assiduously to them, as to have obtained a high reputation in those departments of learning, of which he reaped considerable advantages during the civil wars, and the government of Cromwell. The sciences, however, properly so called, did not engross so much of his time as to prevent him from becoming great in his profession as a divine, which qualified him for those preferments in the church, to which he was successively appointed. In the year 1661, immediately after the restoration, he was created doctor of divinity at Oxford, and was nominated chaplain to his majesty, and presented to the rectory of Rofs, in Herefordshire, which he held till his death on Christmas-day 1678, when he was about 56 years of age. By Anthony Wood he is denominated a capricious and humorous person; but his writings are a proof of his great application to study, of which we may mention the following: “*Astronomia Britannica, exhibiting the Doctrine of the Sphere, and Theory of Planets decimally by Trigonometry*;” “*Help to Calculation, with Tables of Declination, Ascension, &c.*;” “*Trigonometria Britannica, shewing the Construction of the natural and artificial Sines, Tangents, and Secants, &c.*” this consists of two books, one composed by the author, and the other translated from the Latin of Henry Gellibrand; “*Chiliades centum Logarithmorum*,” “*Geometrical Trigonometry*,” “*Mathematical Elements*,” “*Description and Use of the Carpenter's Rule*,” “*The Art of Gauging*.” Besides these, Mr. Newton was author of many popular works for young persons, which were probably extremely useful at that time; though they have long since been superseded by others better adapted to the instruction of youth of both sexes.

NEWTON, Sir ISAAC, the most illustrious of philosophers and mathematicians that the world ever produced, and who, on account of his well-earned celebrity, has been denominated the “Prince of Philosophers,” was born on Christmas-day 1642, at Woolthorpe, a hamlet in Lincolnshire, about six miles south of Grantham. His father cultivated his own paternal estate, but is represented as being a very weak and unsteady man, who died three months before the birth of his only son Isaac, the subject of the present article. Mrs. Newton, though she married again, was particularly attentive to the education of her first-born, and had him carefully instructed in the elements of learning. At the grammar-school of Grantham he laid a solid foundation of classical learning, and gave decisive marks of his natural genius. Dr. Stukely, in speaking of him, says, “Every one that knew Sir Isaac, or have heard speak of him here, recount the pregnancy of his parts when a boy, his strange inventions, and extraordinary inclination for mechanics; that, instead of playing with other boys, when out of school, he always busied himself in making knickknacks, and models of wood in many kinds; for which purpose he had got little saws, hatchets, and hammers, and a whole shop.” The most trifling circumstances, relating to so vast a genius as Sir Isaac Newton exhibited, are deserving of record: hence may be mentioned his very early attention to natural objects and investigation. He had, for instance, when a very little child,



child, a rude method of measuring the force of the wind, by observing how much farther he could leap in the direction of a strong breeze, than he could when he jumped against the wind. When he quitted the grammar-school, he was taken home to be instructed in rural affairs, in order that he might hereafter be capable of managing his own estate with advantage. It was, however, soon discovered that he had higher objects in view than the mere cultivation of land, and attending to domestic concerns: he was perpetually found reading books, which were supposed to be beyond his capacity. He had, previously to this, probably laid it down as a maxim, that what one man could write, that was in itself intelligible, another might, by a certain portion of application, come to understand. Being once sent to Grantham market, he was discovered by his uncle, in a hay-loft, working a mathematical problem; which satisfied this relation that his desire of knowledge was invincible, and that a regard ought to be paid to the turn of his mind: he, therefore, without hesitation, was allowed to enter himself, in the year 1660, of Trinity-college, Cambridge. He was now 18 years of age, and entering upon his course with all the ardour of enthusiasm, much might be expected from him; but, as we shall see, he outran all expectation, and set at defiance the calculations of his most sanguine friends. The activity of his genius, and excellence of his talents, acquired for him the notice of the most considerable mathematicians in the university, among whom was Mr. (afterwards Dr.) Barrow, at that time a fellow of Trinity-college. The friendship thus begun between these two persons, was continued till the hand of death separated them. Newton began his studies with the "Elements of Euclid;" but these did not detain him long. To him there was no "Pons Asinorum," no difficulty that impeded his progress a single moment: he saw the truth of each proposition, it has been said upon unquestionable authority, as soon as he had read the enunciation, and examined the figure to which it referred. The beautiful and sublime truths of common geometry did not, to Newton, lie deep in a well: they seemed instantly to fasten on his mind, and, as he thought, to urge him on to more difficult steps in the progress of science. Afterwards, however, the ingenueness of his mind led him to regret that he had not stopped longer at the gates of knowledge;—that he had not rested a while in the avenues, to contemplate the beauties and excellencies of the plans and outworks, before he had proceeded into the interior;—that he had not examined with a more minute attention Euclid's method of demonstration, and the means by which he had contrived to connect every part of his book, so as to make a system or series of truths depending upon one another, and the whole resting on definitions and axioms; though the axioms themselves will, if closely examined, be found to be only definitions: so that the whole of Euclid's Elements may be safely said to depend entirely on definitions, which proves how important it is for students in geometry, not endowed with peculiar mathematical sagacity, to study with the utmost care the definitions, and to proceed from one step to another with the greatest deliberation. Newton, as we have seen, did not stand in need of this precaution; yet he regretted in after life, that "he had committed a mistake in the commencement of his mathematical studies, in applying himself to the works of Des Cartes, and other algebraical writers, before he had considered the Elements of Euclid with that attention which so excellent a writer deserves." At this period the works of Des Cartes were much in fashion, which of course led our author to study them, attending at the same time to "Kepler's Optics," and to the "Arithmetica Infinitorum" of Dr. Wallis, making improvements and marginal notes upon them as he

went along, which was his usual method of studying any author. The treatise of "Infinities," just referred to, set his invention to work, and was probably that which led him to his "New Method of infinite Series and Fluxions," and which was published in Latin; but which, in 1736, was translated into English by Mr. Colson, and printed by him, with a perpetual Commentary upon the whole book. In the year 1664 he took his degree of B.A., and about this period he turned his attention to the improvement of telescopes. Des Cartes assuming the commonly received opinion, that light was homogeneous, had, upon this principle, discovered the laws of refraction, and maintained that the perfection of telescopes depended on the discovery of a method of making glasses in elliptic, parabolic, or hyperbolic figures. Newton, therefore, in the year 1666, applied himself to the grinding of optical glasses of divers figures; at that time not suspecting that light was other than an homogeneous substance. Not succeeding in various attempts which he made, he procured a glass prism, for the purpose of examining the phenomena of colours, which had lately been discovered by Grimaldi. The vivid brightness of the colours produced by this experiment at first afforded him very great pleasure; but when his surprise was over, and he came to examine them with philosophical accuracy, he was astonished at seeing them in an oblong form, which he thought should be circular. He imputed the irregularity, at first, to some accidental circumstance of which he was not aware: when, however, he found the result uniformly the same in every experiment, he pursued the inquiry, till at length he discovered an infallible method of deciding the point, which produced his "New Theory of Light and Colours." This theory, unexpected and wonderful as it was, did not satisfy him; but urged him on to inquire into the use that might be made of it in improving telescopes, which was his first design. Having now ascertained that light was not homogeneous, but a heterogeneous mixture of differently refrangible rays, he computed the errors arising from this different refrangibility; and finding them to exceed some hundreds of times those occasioned by the circular figure of the glasses, he began to study the subject of reflection with the utmost care. He was now convinced that optical instruments might be brought to any degree of perfection, provided a substance could be found which would bear a polish as finely as glass, and reflect as much light as glass transmits, and that the art of giving it a parabolic figure could be attained. These desiderata he did not suppose could be realized; but while his mind was intently occupied by the speculation, the breaking out of the plague at Cambridge, in 1665, obliged him suddenly to quit his studies and his books, and retire into the country. From this time, for a space of about two years, Newton lived, in a great degree, secluded from the conversation and the society of those persons, by whom he might have been assisted in his studies; but the activity of his genius would not permit him to spend this period without engaging in important philosophical inquiries. It was, indeed, in the solitude now referred to, that the hint occurred which gave rise to the System of the World, which is the main subject of his "Principia." As he was sitting alone in a garden, an apple falling from a tree, led his thoughts to the subject of gravity; and reflecting on the operation of that principle, he began to consider that, as this power is not found sensibly diminished at the remotest distance from the centre of the earth to which we can rise, neither at the tops of the loftiest buildings, nor on the summits of the highest mountains, it was reasonable to conclude that it must extend much farther than was usually imagined. "Why not," said he to himself, "as high as the moon? and if so, her motion must be



influenced by it. Perhaps she is retained in her orbit by it. Though the power of gravity is not sensibly weakened in the little change of distance at which we can place ourselves from the centre of the earth, yet it is very possible that, as high as the moon, this power may differ in strength much from what it is here." He made the calculation; but having gone upon wrong data, in supposing 60 miles to make a degree, instead of  $69\frac{1}{2}$ , the result did not come out according to his expectations: he therefore concluded, that some other causes must be joined with the action of the power of gravity on the moon; and on this account he laid aside, for that time, any further thoughts upon the subject. On his return to Cambridge, in 1667, he was elected fellow of his college, and took his degree of M.A. He now was anxious to improve the telescope, and had made preparations for his experiments, when his attention was interrupted by the business connected with the professorship of mathematics, which Dr. Barrow resigned to him in 1669. Having entered upon the office, he made his discoveries in optics the subject of his lectures, for the first three years after his appointment to the mathematical chair: and having brought his theory of light and colours to a considerable degree of perfection, he communicated it to the Royal Society, of which he was a member; and it was afterwards published in their Transactions, for the month of February 1672. The publication gave rise to a controversy that occasioned him much uneasiness, so that he resolved not to publish any thing further, for a time at least, on the subject; and accordingly he laid aside his optical lectures, although they were actually prepared ready for the press. His analysis by infinite series underwent the same fate. He now resumed his telescope, and observing that there was no absolute necessity for the parabolic figure of the glasses, he completed another instrument of this kind. This answered his purpose so well, that, though it was only six inches long, he had seen with it the satellites of Jupiter, and the different phases of Venus. This telescope he sent to the Royal Society, at their request, together with a description of it, published in the Philosophical Transactions for March 1672.

During this year Mr. Newton published at Cambridge "Bernardi Varenii Geographia generalis, in qua affectiones generales Telluris explicantur; aucta et illustrata ab J. Newton." From this time till 1679 our author maintained a correspondence with Mr. Henry Oldenburg, secretary of the Royal Society, Mr. John Collins, Mr. Flamsteed, and Dr. Halley. During this period, at the request of Leibnitz, he explained his invention of infinite series, and shewed how far he had improved it by his method of fluxions, which, however, he still concealed by a transposition of the letters that made up the fundamental propositions of it into an alphabetical order. The letters concerning this are inserted in Collins's "Commercium Epistolicum," printed in 1712. In 1676-7, he discovered the grand proposition, that, by a centripetal force acting reciprocally as the square of the distance, a planet must revolve in an ellipsis, about the centre of force placed in its lowest focus, and, by a radius drawn to that centre, describe areas proportional to the times. About the year 1680 he made many astronomical observations upon the comet that then appeared; which, for some considerable time, he took not to be one and the same, but two different comets, contrary to the opinion of Mr. Flamsteed. He next resumed his enquiries respecting the moon. As Picart had measured a degree of the earth in 1679, by using his measures, Newton was led to the inference that the moon is retained in her orbit solely by the power of gravity, and, consequently, that this power decreases in the duplicate proportion of the distance, as he had formerly conjectured. Hence he found

the line described by a falling body to be an ellipsis, having one focus in the centre of the earth; and ascertaining, by this means, that the primary planets really moved in such orbits as Kepler had supposed, he had the satisfaction to see that the enquiry, which he had undertaken, at first, from motives of mere curiosity, was capable of being applied to the most important purposes. Upon this he drew up, and afterwards demonstrated, about a dozen propositions relating to the motions of the primary planets round the sun, which he communicated to the Royal Society towards the close of the year 1683. Shortly after this he set down to complete his great work, the "Principia," which was printed under the care of Dr. Halley, and published in the summer of 1687, under the title of "Philosophiæ Naturalis Principia Mathematica." This treatise was composed by the illustrious author from scarcely any other materials than the few propositions above-mentioned, and in the space of a year and a half: it has gone through a great number of editions, though it did not at first meet with that sort of applause to which it was justly entitled. One reason of this was, that Des Cartes had then got full possession of the world, and his philosophy was supposed to be better adapted to common understandings. The "Principia," on the other hand, is in many places extremely difficult, owing to the number of steps which is left out in the demonstrations, so that the best mathematicians were obliged to study it with care, before they could pretend to become masters of this vast treasure of human learning. And notwithstanding the helps that we now have to the right understanding of the "Principia," in Maclaurin's and Pemberton's works; in the "Excerpta" of Dr. John Jebb, and in the Commentaries of the Jesuits, published at Rome in four volumes quarto; still it may be assumed that "none but mathematicians of a high order can completely comprehend the reasonings contained in it. When, however, the true value of this work came to be known, the approbation which had been so slowly gained became universal, and nothing was heard from all quarters, but admiration of what seemed to be the production of a celestial intelligence, rather than of a man." "Does Mr. Newton eat, or drink, or sleep like other men?" said the marquis de l'Hospital, one of the greatest mathematicians of the age, "I represent him to myself," he added, "as a celestial genius entirely disengaged from matter."

A short time before this work went to the press, the privileges of the university of Cambridge were attacked by king James II., who sent a *mandamus* to admit father Francis, an ignorant Benedictine monk, to a degree of M.A. On this occasion Mr. Newton appeared among the most zealous and active defenders of that body, and was appointed one of the delegates to the high-commission court, where they maintained their cause with such resolution and steadiness that the king did not think it right to press the affair. Newton was, after this, chosen one of the representatives of the university in the convention-parliament of 1688, the sessions of which he attended till its dissolution. In 1696, Mr. Newton was appointed to the office of warden of the mint, and in this situation he rendered very important service to the nation, and was properly rewarded, in a few years, with the appointment of master of the mint, a place worth 1200*l.* *per annum*, which he held during the remainder of his life. Upon the promotion he resigned the mathematical chair at Cambridge, and was succeeded in it by Mr. William Whiston. In 1699 he was elected a foreign member of the Royal Academy of Sciences at Paris, and in 1703 he was chosen president of the Royal Society of London, and retained that honourable office till his death. In the following year he published his "Optics; or A Treatise of the Reflections,



Refractions, Inflections, and Colours of Light." This work was the result of his occasional labours for thirty years in bringing the experiments, on which his "New Theory of Light and Colours" is founded, to that degree of certainty and exactness which alone could satisfy himself. This seems to have been his favourite invention: he was the first person who conceived the idea, and engaged in the subtle and delicate study of the anatomy of light; who dissected a ray of light into its primary constituent particles, which then admitted of no farther separation; who discovered the different refrangibility of the particles thus separated, and that these constituent rays had each its own colour inherent in it. On this subject we could enlarge would our limits allow. With the approbation of the author, Dr. Samuel Clarke translated the "Optics" into the Latin language, and he did the business so much to the satisfaction of Mr. Newton, that he presented him with 500*l.* for his labour. It was published in 1706. With the first edition of his Optics, the author published his "Quadratures of Curves," which may be regarded as the earliest appearance, in print, of his Method of Fluxions, which he had invented in the years 1665 and 1666. M. Leibnitz had, since the year 1684, endeavoured to impress the world with the persuasion, that Newton had borrowed this invention from his "Differential Method;" when, therefore, our illustrious countryman laid claim to his own discovery it led to much altercation, but the learned world in general decided in favour of Newton; and Fontenelle, in speaking on the subject, says, "Sir Isaac was, by many years, the first inventor. M. Leibnitz, on the other side, was the first who published this method of calculation; and if he took it from sir Isaac Newton, he resembled Prometheus in the fable, who stole fire from heaven that he might communicate it to men." See our article *KEILL, John*.

In the year 1705, queen Anne conferred on Mr. Newton the honour of knighthood: two years after this, Mr. Whiston, by our author's permission, published his Algebraical Lectures, under the title of "Arithmetica Universalis, five de Compositione et Resolutione Arithmetice Liber," which work was translated into English by Mr. Raphson. In 1711, our author's "Analysis per Quantitatum Series, Fluxiones et Differentias, cum Enumeratione Linearum tertii Ordinis" was published by William Jones, esq. F.R.S., who met with a copy among the papers of Mr. Collins, to whom it had been communicated by Dr. Barrow. It was published in consequence of the dispute relating to the invention of fluxions, which also occasioned the printing, in 1712, by the consent of sir Isaac, a Collection of Letters, already referred to, by him and others in that controversy, under the title of "Commercium Epistolicum D. Johannis Collins et aliorum, de Analysis promota, jussu Societatis Regiæ in Lucem editum." In the year 1715, M. Leibnitz, with the view of gaining credit to the pretension that the "Method of Fluxions" had been borrowed from his "Differential Method," attempted to baffle sir Isaac Newton's mathematical skill by his famous problem of his Trajectories, which he proposed to the English by way of challenge; but though it was the most difficult proposition which his ingenuity, after much study, was able to devise, the solution of it proved scarcely more than an amusement to Newton. The problem was received by him at four o'clock in the afternoon, as he was returning from the mint, and though he was extremely fatigued with business, yet he finished the solution of it before he retired to bed.

Upon the accession of king George I. to the British throne, sir Isaac was particularly noticed at court, and was specially introduced to the princess of Wales, afterwards

queen Caroline, who took great delight in literary and philosophical enquiries, and in the conversation of men distinguished by their talents and knowledge. With that of our author she was always peculiarly gratified, deriving from it that full satisfaction in every difficulty, which she had in vain sought for elsewhere, and she did not scruple to say that she thought herself happy in coming into the world at a juncture of time which put it in her power to converse with sir Isaac Newton. At the solicitations of this princess he drew up an abstract of his "Chronology," and communicated a copy of it to the abbé Conti, upon the promise of his keeping it secret; instead of which he had it translated and printed at Paris, under the title of "Abrégé de Chronologie de M. Le Chevalier Newton, fait par lui-même et traduit sur le Manuscrit Anglois;" a copy was sent to sir Isaac by the bookseller who printed it, under the pretence of asking his consent to the publication; but though he gave a direct and most explicit denial, the work was sent into the world in the course of the year. He accordingly found it necessary to enter into a vindication of himself, which was inserted in the 34th volume of the Philosophical Transactions, under the title of "Remarks upon the Observations made upon a Chronological Index of sir Isaac Newton, translated into French by the Observator, and published at Paris." Of this paper a translation appeared at Paris in 1726, with a letter of the abbé Conti in answer to it. In the same year, likewise, some dissertations were published at Paris by father Souciet, against the "Chronological Index," a reply to which, by Dr. Halley, was given in the 397th Number of the Phil. Transf.

Our philosopher enjoyed a regular and pretty equal state of health until he attained his eightieth year, when he began to decline: his illness was supposed to be occasioned by a stone in the bladder, which at times was attended with such paroxysms of pain as caused large drops of sweat to roll down his face. During these attacks he was never heard to utter the least complaint, nor to express any impatience, and as soon as he had a moment's ease he would smile and converse with his usual cheerfulness. Till this period he had always read and written for several hours in a day, but he was now rendered incapable of much application. On the morning of the 18th of March 1726-7, he read the newspaper, and conversed for a considerable time with Dr. Mead, his physician, having then the perfect use of his faculties, of which he was, however, deprived in the course of the following night, and he breathed his last on the 20th of the same month, being in the 85th year of his age. Splendid funeral honours were paid to his remains, in a manner, in every respect, suitable to his extraordinary merit, and that high estimation in which he was deservedly held in every part of Europe. His body lay in state in the Jerusalem chamber, adjoining the house of lords; and at the interment the pall was supported by the lord chancellor, the dukes of Montrose and Roxburgh, and the earls of Pembroke, Suffex, and Macclesfield.

In contemplating the character and genius of this great man, it is not easy to determine whether sagacity, penetration, strength, or diligence had the greatest share in his composition. He entertained a very modest opinion of his own abilities, saying, when complimented on the extraordinary powers of his mind, if he had done any thing worthy of notice, and of service to the world, it was owing more to his industry and patience of thought, than to any extraordinary sagacity. "I keep the subject constantly before me," said he, "and wait till the first dawnings open slowly, by little and little, into a full and clear light." When engaged in the solution of difficult problems, he was often to completely lost to the world as to forget the common concerns



concerns of life. He has been known to sit for hours on the side of his bed with his clothes half on and half off, absorbed in thought; at other times he has gone through the day without food, having forgotten the wants of nature, in the contemplation of some mathematical truth. Our author's temper is said to have been so mild and equal, that scarcely any accident could disturb it. One instance in particular is mentioned of this disposition. He had a favourite little dog called Diamond, which being left in his study, had overset a lighted candle, among his papers, and burnt the almost finished labours of many years. This loss was irretrievable, yet the philosopher only exclaimed, "O Diamond! thou little knowest the mischief thou hast done."

It should be noted that sir Isaac Newton was candid and affable, and always put himself upon a level with his company. He never thought either his own merit or reputation sufficient to excuse him from any of the common offices of social life; and no singularities, either natural or affected, distinguished him from other men. With respect to his religious sentiments, he was unquestionably a firm believer in the truth of divine revelation, and a serious, rational Christian. His discoveries concerning the frame and system of the universe, he employed to demonstrate the existence of a God, against Atheism of all kinds, and to illustrate his power and wisdom in the creation of the world; and he applied himself with the utmost attention to the study of the sacred writings, and considered the several parts of them with uncommon exactness. He adhered, outwardly, to the communion of the church of England, though he did not believe in all its doctrines: with respect to the person of Christ, there seems no doubt that sir Isaac Newton was inclined to Unitarianism; for this we have the testimony of his friend and co-operator in the mint, Mr. Hopton Haynes, independently of his own writings. Sir Isaac was never married, and Fontenelle says he never had time to think of it, taken up as he was, at first in profound and continual study, and afterwards employed in an important and considerable post, which left no vacancy in his life, nor any occasion for domestic society. He died rich, and intestate. His library has descended to the present times, in his own family, and at the moment of writing this article (March 27, 1813,) it is selling by auction in London, by order of the executors of Mrs. Ann Newton. (See *NEWTONIAN Philosophy*.) For a notice of our author's works not mentioned in this article the reader is referred to the *Biographia Britannica*: the most complete edition of them, collectively, was given to the public by Dr. Horsley in 1785, in 5 vols. royal 4to. See *HORSLEY*. *Biog. Brit.* Pemberton's and Maclaurin's Views, &c.

NEWTON, RICHARD, a learned divine of the church of England, the founder of Hertford college, Oxford, was born at Yardley-Chase, in Northamptonshire, in the year 1675. He was educated at Westminster school, and at a proper time was elected to a studentship of Christchurch college, Oxford. Here he took his degrees of M.A. and B.A., but at what particular period is not known: he proceeded doctor in divinity in the year 1710. For some time he filled the office of college tutor, during which he acquired a high reputation, and afterwards became private tutor in the family of lord Pelham, having under his care the two brothers of his lordship, who were afterwards distinguished as statesmen, viz. the duke of Newcastle and Mr. Pelham; and both these illustrious persons ever after entertained for him a very high regard. Dr. Newton had, however, an independent and noble spirit, which prevented him from soliciting a favour, even from his own pupils, when they had the power of serving him. Mr. Pelham,

when prime minister, it has been said, employed him, more than once, to draw up the king's speeches; and when that statesman was asked why he did not place Dr. Newton in a station worthy of his merits? he replied, "How could I do it? He never asked me." Such is the gratitude of prime ministers!! If his labours as a tutor and politician did not obtain for him the debt of justice; his reputation for learning, and the excellence of his character as a clergyman, were the means of his preferment. Dr. Compton, bishop of London, collated him to the rectory of Sudbury, in Northamptonshire, and in 1710 he was, through Dr. Aldrich, inducted principal of Hart-hall, which he retained with the living of Sudbury, where he resided several years. At this time Hart-hall was an appendage to Exeter college: from a state of dependence, Dr. Newton conceived the project of rescuing it, and of erecting it into an independent college. In the pursuit of this laudable purpose he had to encounter much opposition, particularly from Dr. CONYBEARE (see his article). The struggle between them lasted some years, and it has been said, that in no contest were two able men more equally matched, and that the papers which passed between them, like Junius's letters, deserved to be collected, on account of the beauty of their style, and the ingenuity of their arguments. Dr. Newton did, however, succeed in accomplishing the object which he had in view, and in the year 1740 obtained a charter, converting Hart-hall into Hertford college; of which, at a great expence to himself, and with considerable aid from his friends, he was the founder and first head. He was afterwards promoted to a canonry of Christchurch, and held it with his principality of Hertford college till his death, which happened in the year 1753, when he had attained to the 78th year of his age. He was as polite a scholar, and as accomplished a gentleman, as almost any person of the age in which he lived. With the modern languages, as well as with the ancient ones of Greece and Rome, he was intimately acquainted. In closeness of argument, and perspicuity of style, he had no superior. "Never," says his biographer, "was any private person employed in more trusts, nor were trusts ever discharged by any man with more integrity." Though attached to the church of which he was a member, he lived in habits of friendship with many who dissented from that church: he visited and highly esteemed the celebrated Doddridge. He saw, and with pleasure admitted, that they both aimed at the same great end in fitting young men for the important work of the Christian ministry. On his death-bed, Dr. Newton ordered all his writings to be destroyed, excepting a select number of sermons which he intended for the press. These, with three or four others that had been published in his lifetime, were published in an octavo volume in 1784: he was author also of "A Scheme of Discipline, &c. for Hart-hall;" "University Education, or an Explication and Amendment of the Statute which prohibits the Admission of Scholars going from one Society to another, &c.;" "Pluralities Indefensible &c.;" and after his death, his successor, Dr. Sharp, published from his manuscripts "The Characters of Theophrastus, with a strictly literal Translation of the Greek into Latin, &c. with Notes." *Gent. Mag.* 1783-4.

NEWTON, THOMAS, a learned English prelate, was born at Lichfield in the year 1704. He received the first part of his education in grammar learning at the free-school of his native town, whence he was removed to Westminster school in 1717, and was nominated a king's scholar. Having continued there six years, he was elected to Trinity college, Cambridge, where he resided eight months in every year, assiduously occupied in his studies till he had taken



taken his degree of B.A. after which he obtained a fellowship of his college, and then came to settle in London. He was ordained deacon in December 1729, and priest in the following year by Dr. Gibson, bishop of London. For some time he officiated as curate at St. George's church, Hanover-square. His first preferment was that of reader and afternoon preacher at Grosvenor-chapel, in South Audley-street; in which situation he became acquainted with Lord Carpenter, who took him into his family as tutor to his son, who was afterwards created earl of Tyrconnel. In 1738 he was appointed, by Dr. Pearce, morning preacher at the chapel in Spring-gardens, which gave him an opportunity of becoming acquainted with several families of consequence, among whom was that of Mr. Pulteney, and thus opened his way to preferment. When Mr. Pulteney was created earl of Bath, Mr. Newton was appointed his first chaplain, and through his lordship's interest, in 1744, he was preferred to the rectory of St. Mary-le-Bow, in Cheap-side. Upon this promotion he quitted the chapel in Spring-gardens; and his fellowship at college became vacant. At the Commencement in 1745 he was admitted to the degree of D.D. During the rebellion of this year, he was distinguished by the zeal with which he defended the cause of his king and country in the pulpit; and he published a sermon which he preached before the house of commons, and two others. In 1747 he was chosen lecturer of St. George's, Hanover-square. In 1749, Dr. Newton published, by subscription, his splendid edition of Milton's *Paradise Lost*, in 2 vols. 4to. accompanied with notes; and he prefixed to it a life of the author, intending to include the substance of all the preceding lives of Milton, with improvements and additions. This was an extremely popular work, and passed through eight impressions during the life of the editor. After this Dr. Newton published the "*Paradise Regained*," and other poems of the divine Milton, in the same manner, with notes, the result of the communications of persons of the greatest eminence in the republic of letters. From these editions of Milton he gained more in a pecuniary way than the author did from all his works together, but his greatest gain, in his own estimation, was that which he acquired by their introducing him to the friendship and intimacy of two such men as bishop Warburton and Dr. Jortin. In 1751, Dr. Newton preached a sermon at St. George's, Hanover-square, upon the occasion of the death of the prince of Wales, which was the cause of his being appointed one of the chaplains to her royal highness the princess of Wales. In 1754 he lost his father, at the age of 83, and within a few days he met with a still more severe affliction in the death of his wife, at the early age of 38, with whom he had lived most happily about seven years. This, he said, was the severest loss he had ever met with, and it had nearly overwhelmed him. At this time he was fortunately engaged in writing his "*Dissertations on the Prophecies*," an employment which he found well calculated to draw him from himself, and thus alleviate his sorrows. The first volume of this work was published in the following winter, but the others did not appear till about three years afterwards. In the mean time the author was appointed to preach the lecture founded by Mr. Boyle. His "*Dissertations*" were originally drawn up in the form of sermons, but were afterwards new-modelled, and confirmed by proper authorities. They met with a favourable reception both at home and abroad, have gone through a great number of impressions, and have been translated into several languages. In 1757, Dr. Newton was nominated one of the chaplains in ordinary to his majesty, while he was permitted to retain his station in the princess of Wales's household, and soon afterwards he was made prebendary

of Westminster. This preferment was speedily followed by his appointment to the office of sub-almoner to the king, for which he was indebted to the unsolicited favour of Dr. Gilbert, archbishop of York, who also gave him the precentorship of his church. In 1761 he was nominated bishop of Bristol, and canon-residentary of St. Paul's, with a permission to hold his city-living in commendam. In 1764 he was thought of by ministers as a proper person to fill the vacant see of London, but the king had given that kind of promise for bishop Terriek, during lord Bute's administration, which he thought himself now obliged to fulfil. In the same year he was pressed to accept the primateship of Ireland, but being turned of 60 years of age, he thought proper to decline the offer, thinking it was too late in life to change his country, and to form an entirely new set of connections, and the more so as his health was very precarious. In 1768 he was made dean of St. Paul's, when his ambition was amply satisfied, and he immediately resigned the rectory of St. Mary-le-Bow. Scarcely had he taken possession of his deanery-house when he was seized with a very serious attack, which had nearly proved fatal, but he recovered so far as to be able, for several years, to go through the duties of his offices with some degree of regularity. In 1776 he retired to a house at Kew-Green, which he purchased for the sake of getting out of the bustle of the world. Here his principal exercise was walking in his rooms, which he did repeatedly in the intervals between reading and writing. Company he did not stand in need of; besides, he had resources in himself, and possessed a never-failing fund of employment and entertainment in his books, prints, and pictures. These were the most expensive articles of his life, and in pictures it may be said he indulged to some kind of excess. As a lover of the fine arts, the Royal Academy applied to him, representing that the art of painting would never grow up to maturity and perfection, unless it could be introduced into churches as in foreign countries; that to make a beginning, they offered their services, free of expence, to the dean and chapter to decorate St. Paul's with Scripture histories. The dean was delighted with the offer, and communicated it to his majesty, whose approbation he readily obtained. But the archbishop of Canterbury, and the bishop of London, disapproved of the measure, as likely to excite much clamour and prejudice in the multitude, and to be represented as an artful step towards the introduction of popery. It was also opposed upon the ground of its aptitude to divert the minds of the auditors from the proper subjects of attention in such places. To his regret and mortification, therefore, our worthy prelate was obliged to abandon a scheme into which he had entered with much ardour. He died suddenly on the 14th of February 1782, having long sustained, with resignation and patience, the infirmities of old age, added to continual fits of severe pain and sickness. He had just risen and dressed, and then enquired the hour; being answered that it was upon the stroke of nine, the bishop made an effort to take out his watch, to set it right, but sunk down in his chair, and expired without a sigh, or the least visible emotion. The life of this excellent prelate was an exemplary pattern of piety and diligence: he was particularly distinguished by a simplicity of mind and manners, but he was much under the dominion of prejudice, and thought very unfavourably of those whose sentiments were different from his own in religion and politics. Nevertheless, he himself did not admit all the doctrines of the church to which he belonged: he was an enemy to the system which inculcates the eternity of hell-torments, and wrote in defence of the final restitution of all things. The value of the writings of the bishop of Bristol has been thus estimated in the *Monthly Review*: "They may



may be reckoned among the most useful, if not the most learned and brilliant productions of this or of any other country. They are plain, rational, and instructive. They bear marks of great industry, piety, and a good understanding. If they have nothing to gratify a metaphysical genius, and little to inform the deep scholar; if fancy is not much charmed by their novelty or elegance; if no addition is made by them to the great stores of criticism or erudition, yet they can boast a higher merit, and are likely to produce an effect that will outlive the inventions of genius, and the accumulations of learning." They consist of the "Dissertations on the Prophecies;" ninety Dissertations on various parts of the Old and New Testament, and on various moral and theological subjects; and "Sermons" and "Charges." The whole were collected by the author, and printed in 3 vols. 4to. with his life prefixed to them, drawn by his own hand. They have since made their appearance in 6 vols. 8vo. To the life just mentioned, the Brit. Biog., and the 68th volume of the Monthly Review, we refer for other particulars relating to bishop Newton.

NEWTON, in *Geography*, a pleasant township in Middlesex county, Massachusetts, on Charles river, incorporated in 1661, and containing 1491 inhabitants; 9 miles W. of Boston.—Also, a small town in Chester county, Pennsylvania; 22 miles S. of Philadelphia.—Also, a township in Rockingham county, New Hampshire, on Powow river, adjoining Amesbury, in Massachusetts, 10 or 12 miles S. of Exeter; incorporated in 1749, and containing 450 inhabitants.

NEWTON-Bushel, a market-town in the hundred of Teignbridge, and county of Devon, England, is situated 12 miles distant from Exeter, and 187 miles from London. It consists of two parishes, now united, *i. e.* Newton-Bushel and Newton-Abbot. The houses are very indifferently built, and the streets badly paved. The principal street is much obstructed by an old market-house and shambles, said to be erected by Waller, after the civil wars, as a kind of indemnity for his having attempted to deprive the inhabitants of their established market. The parish church stands about a mile to the west of the town; but there are two chapels of ease within it. The population survey of the year 1811, returns this town as containing 193 houses, occupied by 1001 persons. Four annual fairs are held; and a weekly market on Wednesdays.

About a mile south of the town is Ford, a house built in the reign of king James I. by sir Richard Reynell, an eminent lawyer. In 1625 Charles I. took up his abode here. The house, which now belongs to the Courtenay family, stands in a retired lawn, and opposite to it is a small deer-park. Contiguous to it is a charitable institution, called the "Widow's House," founded by lady Lucy, wife of sir Richard Reynell, for the reception of four clergymen's widows.

To the west of Newton, about a mile, is Bradley, an

ancient mansion, formerly belonging to the Bussells or Busshells, from whom the town derives its second appellation, and now the property of — Lane, esq. The house displays some interesting specimens of ancient architecture; and the surrounding scenery is highly picturesque and romantic. Polwhele's History and Antiquities of Devonshire.

NEWTON-Douglas, a considerable borough of barony in the shire of Wigton, Scotland, is seated on the river Cree, which is navigable within two miles of the town. This place owes its origin to a younger branch of the Stewarts, earls of Galloway, who gave it the name of Newton-Stewart. The superiority of the village, and neighbouring estate, however, having come into the possession of William Douglas, esq., he granted to it a charter, under the chancery seal, constituting it a burgh of barony, by its present appellation. A very flourishing manufacture of cotton is carried on here; and here are a number of tan-works, and a carpet manufactory. Over the river is thrown a bridge, which affords a ready communication with the country on the east; and as it is now a stage town on the great road from Edinburgh, in addition to its other advantages, there is every reason to conclude it will shortly become one of the first towns in this portion of Scotland. According to the parliamentary returns of 1811, it contains 524 houses, and a population of 2847 persons. Beauties of Scotland, vol. ii.

NEWTON in the Willows, a borough-town in the parish of Winwick, hundred of West Derby, in the county of Lancashire, England, is situated eight miles distant from Wigan; and 192 miles from London. It formerly had a market, which has long been disused, though the market-cross is still standing. Newton is a borough by prescription, and has returned two members to parliament from the first year of queen Elizabeth. The town consists chiefly of one broad street. Here is an old hall built of wood, with much painted glass still remaining in its windows: it stands on a rocky foundation; and behind it the rock is hollowed out in a very singular manner, appearing to have had subterraneous passages, which, by removing the surface of the rock, are now laid open. Adjoining to this hall is a small rising ground, which was formerly nearly surrounded by a moat, of which here is still a small remnant. The tradition is, that it was, at some remote period, the residence of a king. Newton contained in the year 1811, according to the parliamentary survey, 1589 inhabitants, occupying 269 houses. Four fairs are held annually; and here is a considerable manufacture of fustians and Manchester goods. At a place called the "Red Bank," near Newton, in August 1648, a detachment of Cromwell's army defeated a party of Highlanders on their march from Preston; and the greater part of the prisoners were hanged in a field near the scene of action, which still bears the name of Gallows Croft. Beauties of England and Wales, vol. ix., by J. Britton, F.S.A.



















